

October 1976 30p

AIRFIX

magazine for plastic modellers

Inside: Sherman Crab and WW2 armoured train models, 1:32 German figure conversion and the Horsa goes to war



More night fighter models



Photo report – Soviet warships in the North Sea

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magazine for plastic modellers

Editorial Director **Darryl Reach** Editor **Bruce Quarrie** Art Editor **Tim McPhee**
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On the cover

Top Another superb painting from Martin Holbrook depicting a Defiant night fighter of No 256 Squadron taking off for an evening sortie. More drawings accompany Bryan Philpott's article inside on modelling single-engined night fighters. **Bottom** Lovely shot of the very striking Canadian Air Force CF-104 in 'Tiger Meet' markings spotted at Upper Heyford by Peter Guiver. Three additional photos of this machine, including a close-up of the nose insignia, appeared in last month's issue, providing ample information for any modeller wishing to try this paint scheme.

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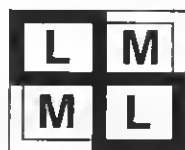
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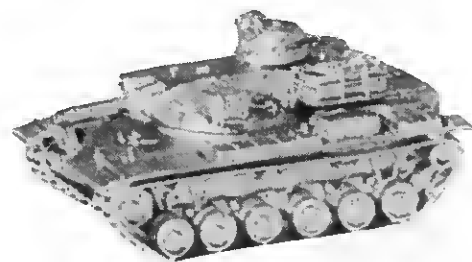
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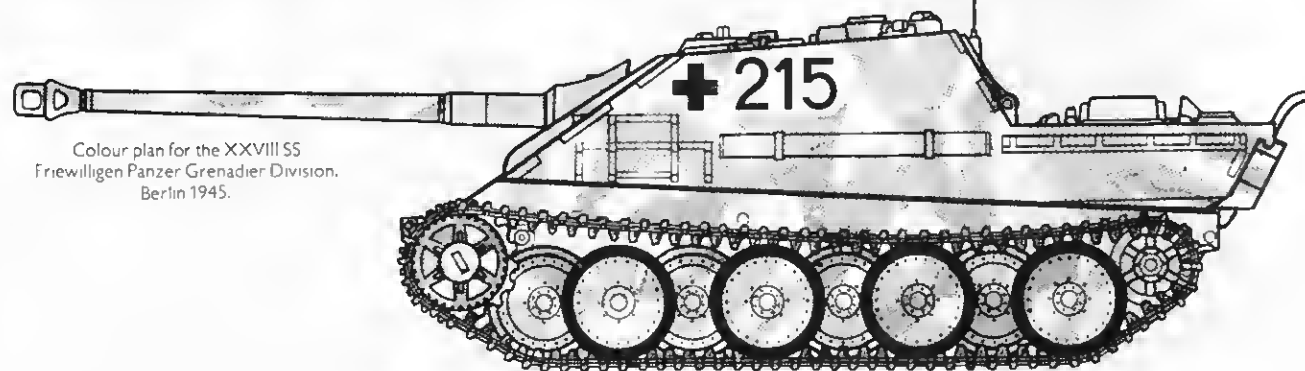
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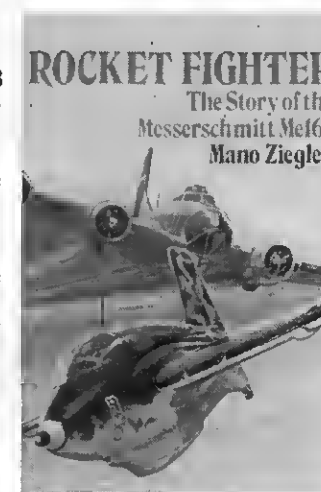


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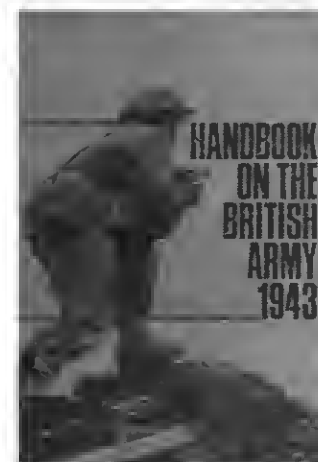
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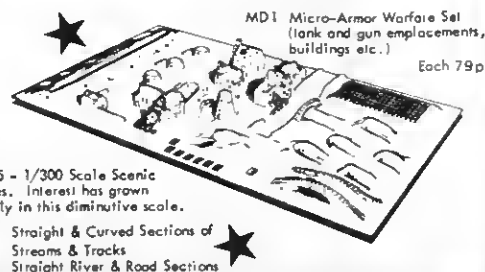
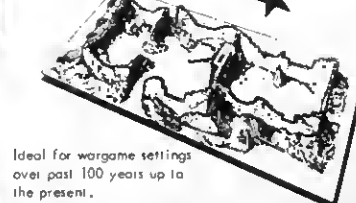
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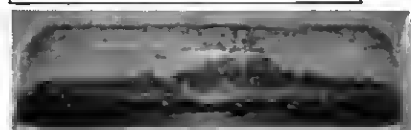
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RUSSIAN CIVIL WAR 1917-1922

- ★ Bookcase Box and mounted, three-colour 22" x 34" map
- ★ Multi-Player game with solitaire scenario
- ★ Political and military conflict

The third greatest catastrophe this century has witnessed was fought in Russia between the two World Wars. At issue was the destiny of the world's largest nation. Preceded by the revolutions of 1917, which toppled both the Czarist Regime and the Provisional Government which followed, the Russian Civil War of 1917-1922 remains one of the bloodiest, but most significant conflicts in European history.

Russian Civil War is an historical simulation of the military and political conflict which abolished Czarism and created the foundation of the Soviet Union. A totally new design concept, Russian Civil War is the first game in SPI's new multi-player Power Politics Game series. The focus of the game is political, rather than strictly military. By utilizing new game mechanics designed to simulate inter-Player diplomacy and political strife, conflict simulation assimilates a new dimension incorporating added excitement and realism.

The Russian Civil War was a unique conflict requiring a unique simulation. The basic game is designed for 3-6 Players, each of whom controls one or more factions among the revolutionary, counter revolutionary, nationalist and interventionist forces which participated in the bloody and chaotic struggle. The colour-coded units which represent these forces are differentiated as 'Red' (revolutionaries), 'White' (counter-revolutionaries), 'Green' (nationalists seeking regional independence), and 'Blue' (the foreign interventionist forces of Germany, France, Czechoslovakia, Greece, Rumania, Hungary, Japan, the United States and the United Kingdom). The die-cut units (400 in all) are complemented by a mounted, three-colour map, which folds into a convenient bookcase-sized game box.

The multi-Player game combines the familiar movement-combat mechanics of a wargame with innovative game mechanics designed to stimulate inter-Player political conflict. Each Player is competing against all of the other Players, engaging enemy forces to destroy them in combat. Each Player's forces consist of combat units, which he manipulates via historical leader units. At the beginning of the game, all of the major military and political leaders (ranging from the top 'Red' figures, Lenin and Trotsky, to their 'White' military foes, Generals Wrangel and Deniken) are distributed among the Players. These leaders are used to move and control the many Red and White Russian Army units indigenous to the various geographical provinces depicted on the map. Each Player receives Victory Points at the end of the game for enemy leaders and combat units which he eliminated during the course of the game.

Between multi-Player games, you can sharpen your strategy playing the intriguing solitaire version of Russian Civil War, which has been incorporated in the standard game rules, along with a new quick-reference Rules Summary, which makes the game both easier to learn and faster to play than many other simulation games.

THE PHOENIX

Phoenix is the magazine published by Simulations Publications UK for British boardgamers. Produced bi-monthly, it contains games related articles submitted by gamers. These articles take the form of game reviews, suggested game amendments, extra scenarios, rule interpretations and regular book reviews. Historical articles, fringe articles (on weapons systems etc) and gamers' tips etc will also appear from time to time. Whilst Phoenix contains up to date news from SPIUK and a British feedback to help us provide the service that you want, the magazine is not intended as our mouthpiece but rather as the mouthpiece of you . . . the gamer. Phoenix is sent automatically to UK Strategy and Tactics subscribers but can also be purchased separately.

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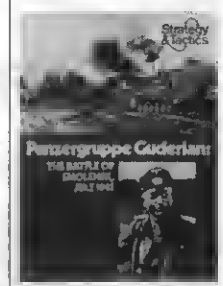
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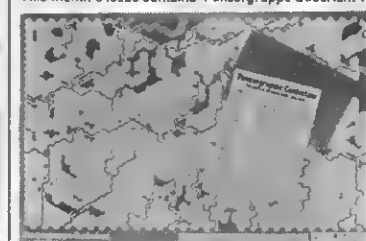
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Subscribers to S&T also receive a free copy of Phoenix with each issue.

The Physical components of all games are generally similar, consisting of a playing map printed on cardstock or heavy paper (usually 22" x 35"), 100 to 400 die cut, cardboard playing pieces and complete rules. Games may be bought either packaged in a specially designed multi-compartmented plastic tray (boxed) or as a Z-Pack. Z-Pack games come packed in minipolythene bags and are identical to the boxed games except for the packaging.

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MODELLERS' DIARY

Compiled by
Brenda Ralph Lewis

October 2 1944

ON OCTOBER 2 1944, four American Thunderbolts encountered a strange German aircraft. They gave chase, but just as one Thunderbolt got on its tail, the German zoomed away at tremendous speed and disappeared into the clouds. The American pilots were amazed and rightly so. They had just witnessed the first operational jet in flight — the Messerschmitt Me-262 (Airfix Model No 01030-4) — which could do 541 mph (871 kph), compared to a 'conventional' fighter's 300 mph (483 kph) or so.

The Me-262 was powered by two 1,984 lb (900 kg) Junkers Jumo 044-B series turbojet engines and outpaced by 121 mph (195 kph) its nearest turbojet rival, the British Gloster Meteor I. The Allied fighters which had to face this revolutionary German aircraft were, however, not Meteors, but 'conventional' Thunderbolts, Spitfires, Mustangs and Tempests. One Mustang pilot reckoned that one Me-262 was equal to eight Mustangs.

Nearly 41 feet (12.5 m) in wing span, nearly 35 feet (10.6 m) long, with a maximum range of 652 miles (1,049 km) and armed with four 30 mm MK108 cannon, the Me-262 posed a particularly dangerous threat to Allied bombers raiding Germany in 1944 and 1945. Fortunately for the Allies, however, the German jet had come too late to alter the course of World War 2, and Hitler's insistence on using it as a bomber, not a fighter, deprived it of the chance to use its vastly superior speed to full effect.

October 4 1957

ON OCTOBER 4 1957, the Russians astounded the world by putting into Earth orbit the first artificial satellite — the 184 lb (83.4 kg) Sputnik I. In Airfix Model No 05172-9, Sputnik is featured together with

Airfix's kit of the Endeavour.



the later Vostok and Soyuz. Also included is a Soviet cosmonaut, the first of whom — Yuri Gagarin — inaugurated manned space flights in Vostok I (April 12 1961). The one-orbit flight, some 90 minutes long, was a triumph and earned Gagarin instant world-wide fame.

The first Soyuz mission, made by Vladimir Komarov (April 23-4 1967) hit the headlines in grimmer fashion: after 17 Earth orbits, Komarov was killed when his spacecraft's parachutes fouled.

Sputnik I, being unmanned, carried no such risk. However, it did demonstrate the nature of the new Space Age speed and power. When it lifted off from Baikonur on the Kazakhstan steppe, its 32 giant rocket exhausts made the earth tremble. Minutes later, Sputnik was orbiting at 17,398 mph (28,000 kph).

A month afterwards, Sputnik II, carrying a dog, Leika, was launched (November 3 1957). By March 25 1961, some three weeks before Gagarin went up, eight more Sputniks had orbited the Earth. After Gagarin, there were five more Vostok flights, including Vostok VI in which Valentina Tereshkova, the first woman in space, made 48 Earth orbits (June 16-19 1963).

Soyuz also had a notable 'first' among its total of 21 flights — the link up of Soyuz XIX and the American Apollo XVIII in July 1975.

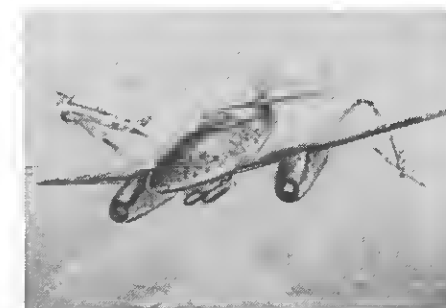
October 12 1492

ON OCTOBER 12 1492, Christopher Columbus came ashore on a Caribbean island and fell to his knees in the sands to give thanksgiving for his safe arrival. Columbus had good reason to be grateful that his three ships, *Santa Maria*, *Nina* and *Pinta* had brought him safely across the Atlantic, because none was suitable for such a task. For one thing, Columbus complained, they were rotten and 'pierced with worm-holes like a beehive'. For another, the ships were very small and that applied even to *Santa Maria*, the largest of the three.

Santa Maria (Airfix Model No 01265-8), displaced only 50 tons (50.8 tonnes) and was 75 feet (22.86 m) long and 25 feet (7.62 m) in the beam. She was a 'nao', a larger version of the caravel with some of the features of the top-heavy carracks. Carracks were large, powerful, rather unwieldy ships with full bows and rounded sterns. They were 'carvel-built' with flush planking, vertical supports and horizontal wales to protect the hull. *Santa Maria* carried the high forecabin and poop typical of the carrack and also had the three masts characteristic of carracks and caravels. No wonder Columbus thanked God for his safe arrival — he had just survived the mighty Atlantic currents and rollers in what was really a top-heavy tub.

October 22 1907

ON OCTOBER 22 1907, the Cunard liner *Mauretania* (Airfix Model No 04207-1,



Airfix's Me 262 kit.

Series 4) left Tyneside for Liverpool after completion at the Swan Hunter shipyard. *Mauretania* was built to be a record-breaker, an express liner with the size and speed that could give Cunard superiority over all rivals on the transatlantic run.

Mauretania brilliantly fulfilled her owners' intentions by winning the coveted Blue Riband of the Atlantic a fortnight after her maiden voyage in November 1907, with a record run of 118.5 hours at 23.69 knots.

Between January 1909 and November 1911, *Mauretania* crossed the Atlantic 88 times and averaged 25 knots on 70 occasions. Everywhere she docked, crowds were agog to see this magnificent 30,696-ton (31,187 tonne) liner. She was indeed a fine sight — 790 x 88 x 61 feet (240.7 x 26.82 x 18.5 m), with four funnels, two masts and six passenger decks.

Below decks, *Mauretania* was powered by four direct-action Parsons steam turbines and had quadruple screws, 11 watertight bulkheads and bunkers for 6,000 tons (6,096 tonnes) of coal.

During her wartime service (1914-1918) *Mauretania* was a troop and hospital ship and transported over 70,000 soldiers overseas. After the war, *Mauretania* resumed her role as a passenger and cruise liner until she went out of service in 1934. By that time, she had steamed over 2,000,000 ocean miles (3,218,600 km) in 27 years.

October 28 1728

TWO CENTURIES ago, the Pacific was still largely unknown to Europeans. This gap in knowledge was filled mostly by Captain James Cook, who was born on October 28 1728. Cook made three long voyages to the Pacific (1768-1779) during which he explored the Ocean from Arctic to Antarctic, discovered the east coast of Australia and circumnavigated New Zealand.

The four ships in which Cook made these comprehensive ocean sweeps were all Whitby-built coaling 'cats' and the first of them, the ship in which Cook sailed on his first voyage on August 25 1768 was the *Endeavour* (Airfix Model No 07251-7, Series 7).

Built in 1764, the 100 foot (30.48 m) 366-ton (371-tonne) *Endeavour* was described in the Admiralty Navy List as a 'cat-built barque'. This meant that her stern was very full on the waterline, with her upper works tapering above. There were two decks, the lower one 97.7 feet (29.77 m) in length and an ample hold 11.3 feet (3.4 m) deep. The ship had a keel measuring 18 feet (5.5 m) and a wide beam of 29.2 feet (9 m). *Endeavour* was ship-rigged with a square mizzen topsail, in the usual fashion of her time and under sail in good conditions, could reach a speed of seven knots.

Soviet warships



Large numbers of Soviet warships have been observed heading out to the North Atlantic recently via the North Sea, some of them even coming within view of our oil rigs. One of these was the new Russian aircraft and helicopter carrier Kiev, seen above being shadowed by HMS Danae near the Shetland/Faeroes gap. Also present was the futuristic Soviet 'Nanuchka' Class guided missile corvette, photographed at speed from a Sea King helicopter (MoD).



Will the Eagle Transporter escape the green monster?

Professor Bergman and Commander Koenig land on a new planet.

A figure materialises before them.

"My name is Kapitaine Morgen. I greet you in peace. Follow me."

Professor Bergman and Commander Koenig feel uneasy. They do not follow Kapitaine Morgen as he disappears through a clearing in the undergrowth.

Shimmering Tree

"Look! That tree seems to be shimmering," remarks the Professor.

"Don't touch it!" screams Commander Koenig.

"Too late!" The Professor tries to examine the bark.

"It has no substance!"

"You are too clever," croaks an inhuman voice.

The Green Monster

With that the surroundings disappear and a horrible jelly-like, green monster tries to explain.

"The lush surroundings you first saw was Planet Egag a million years ago. It was just a projection of itself. You must help us. We were overtaken by an evil monster. We need to inhabit your bodies if we are to live again. Come! Come!"

With that Commander Koenig and the Professor race to the Eagle transporter as the green monster tries to overtake them.

"Back to Moonbase and safety!" orders the Commander.

Your very own Airfix Eagle Transporter

Now Airfix Construction kits give you the chance to create your own Eagle transporter and hair raising adventures. The Airfix Eagle transporter kit captures all the details of the original from the exciting T.V. series Space 1999. Forty pieces go to make up the kit and they include the complex control cabin, landing pads, laser armament, missile racks and Alpha Moonbase transfers.

The Moonbase Eagles have a skeletal framework with nuclear power units aft and in the four lateral lifting bodies.

The complex control cabin at the front is known as 'the beak' and from here the craft is piloted and the systems housed.

Hydraulic landing pads enable Eagle to operate from rough terrain and sensing devices provide a fail-safe operational factor.

The Eagle's central area is capable of taking a variety of module pods or units designed to carry stores, personnel, survey equipment etc. For combat use, Eagles can be fitted with



formidable laser armament and missile racks. In the Eagles, Moonbase personnel journey to other planets and endeavour to protect the colony from outside forces.

Their versatility enables them to undertake hazardous missions in the colony's search for a planet on which to establish new life.

Airfix wish you good luck in your search for a new planet!



MORE KITS, MORE DETAIL, MORE FUN.



Alconbury's aggressive Tigers

MUCH OF the news concerning military aviation in recent times seems to consist of cut-backs or disbandments, and thus the formation of a new unit operating an aircraft type new to British skies makes a pleasant change. RAF Alconbury is the base for the 527th Tactical Fighter Training Aggressor Squadron, US Third Air Force, who are now flying 20 brand-new Northrop F-5E Tiger II machines.

Despite the advent of many missile systems in recent years, the art of air-to-air dogfighting is still considered to be an important and relevant part of flying training in the US Forces, mainly from experiences gathered in South-East Asia in recent conflicts. For this training, an aircraft type was needed that provided a dissimilar performance to the current front-line fighters (mainly F-4 Phantoms). The F-5 was chosen on account of its small size, its high manoeuvrability and the lack of smoke trails.

The mission of the 527th TFTAS is to provide training in air combat tactics for US fighter units in Europe, with its F-5Es acting both as targets and attacking aircraft. This idea of fighter training was first employed by the US Navy, with its 'Top Gun Flight', based at Naval Air Station Miramar, California, equipped with F-5Es, T-38s and A-4 Skyhawks. The USAF then formed similar units at Nellis Air Force Base, Nevada, where the 64th and 65th Fighter Weapons Squadrons fly T-38s and F-5Es respectively.

The training programme of the 527th involves both academic work, covering enemy aircraft, weapons systems, doctrines and tactics, and then visual air-to-air combat training. The machines of the 527th are painted in five different camouflage colour schemes, in order that visual contact is made more exacting.

It is intended that aircraft and aircrews from European-based F-4 units will deploy to Alconbury to conduct training missions with the 527th, whilst F-5Es will also operate from overseas bases. A typical deployment to Alconbury would involve four Phantoms, together with supporting maintenance units, for a two week period. Later, this will include squadrons equipped with the F-15 Eagle. In the opposite direction, the 527th would send three F-5Es to fly combat training missions with F-4 units at their home bases, again with tactical support.

A typical training sequence would start with a briefing on local conditions and fea-

Continued on page 74

Other Soviet visitors to our waters were the 'Kotlin' Class destroyer seen above, the old cruiser Sverdlov in the centre below, photographed some 200 miles from Edinburgh, and the 'Krivak' Class guided missile destroyer at bottom (MoD).



AIRFIX NEW MODELS FILE

WESTLAND-AEROSPATIALE LYNX

The Westland Aerospatiale Lynx, multi-role helicopter will form a large percentage of the British armed forces helicopter units. Lynx's manoeuvrability will enable it to fly 'pop up' missions in the tactical role - that is to rise rapidly from cover, fire its missiles and return to concealment.

Large scale production is underway for the Army Air Corps and the Royal Navy, and for overseas customers in the Middle East and the navies of France, the Netherlands and Brazil. An advanced technology helicopter, the Lynx is the result of a successful Anglo-French partnership begun in 1967 and now involving the two largest helicopter firms in Europe, Westland Helicopters in Britain and Aerospatiale in France.

Known initially as WG13, the Lynx was designed under the leadership of Westland and with both an army and navy requirement to meet, a helicopter with a high degree of versatility and commonality was called for. Two basic versions are in production, the utility or army Lynx and the naval Lynx. Both appear similar but differ in detail.

The missile operator sits in the left-hand seat, alongside the pilot, controlling the missiles via a stabilised sight. Guns, rockets and cameras can be carried and in the transport role a section of ten men can be ferried 450n.m. or a 3,000lb. load, such as a

field gun, can be lifted in a sling below the fuselage. Lynx's performance was demonstrated in June 1972 when it set a new world speed record in its class of 200m.p.h. A further remarkable feature of the machine is its ability to perform a positive g roll, a manoeuvre few helicopters can do. The secret behind this is the advanced semi-rigid rotor head which gives a marked increase in control characteristics.

The Airfix Lynx is exact in every detail and features the army version. Nearly one hundred different parts go to make this exciting kit and it comes complete with its two-man crew, sliding doors, missile containers on pylons and two rotating rotors.

For up to date news and details of Airfix models get the Airfix magazine.



**Westland-Aerospatiale Lynx (army)
72nd Scale Series 3.
New to the world's biggest range
of construction kits.**

Technical Details	
Date of origin:	1967.
Engine:	Twin Rolls-Royce BS.360 Gem turbines.
Top Speed:	200m.p.h.
Hovering Ceiling:	12,000ft.
Rotor Diameter:	42ft.
Fuselage Length:	38ft. 3 1/4 ins.

WILD CAT STRIKER.





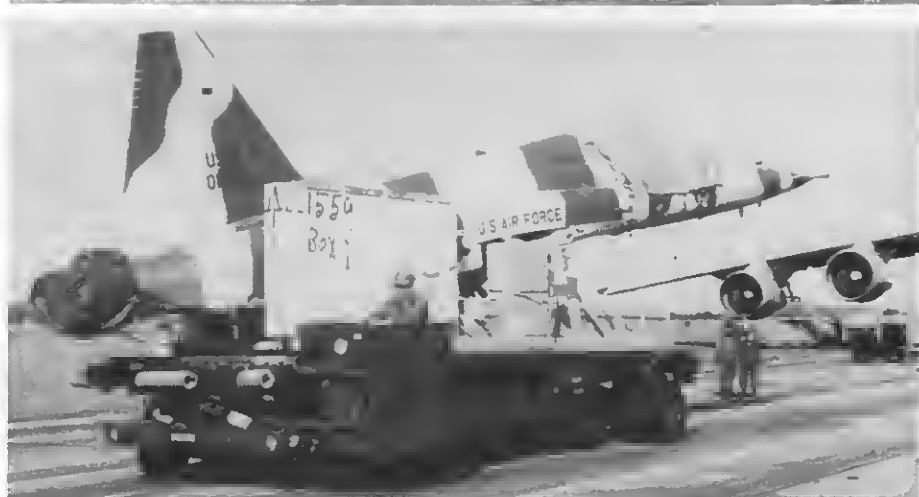
tures of the area, the academic course, dissimilar air combat flying training, and then the most important part of the exercise, the de-brief which may last for up to two hours. It is considered important that both the 527th detachment and the men and aircraft from the unit being trained operate from the same base in order that the results may be fully discussed and evaluated. Use is made of camera-gun film from F-4E and F-5E aircraft, whilst units operating the F-4C and F-4D variants gain information from radar checks. Training missions may be flown at both high and low levels. These operations will be flown mainly over Western Europe under radar control from ground stations, and possibly later in co-operation with the new Boeing AWACS aircraft.

Training sorties from Alconbury will be conducted in the Bentwaters Air Training Area, and also in a new ATA over the North Sea some 125 miles north-east of Alconbury.

The 527th has just over 40 personnel and the pilots are highly experienced volunteer instructors from Phantom units who have passed through the Fighter Weapons School at Nellis AFB. Also with the unit are experienced controllers who are experts in ground controlled interceptions, and these officers monitor the training missions with particular regard to the safety of all aircraft in the training area.

The F-5E Tiger II first flew in August 1972, for use as a lightweight air superiority fighter with a secondary air-to-ground attack capability. Power comes from two General Electric J85-GE-21 turbojets, rated at 2,268 kg/5,000 lb thrust with reheat. Armament consists of two nose-mounted 20 mm M-39 cannon with 280 rpg, whilst two AIM-9 Sidewinder air-to-air missiles may be carried on the wingtips, with up to 3,175 kg/7,000 lb of external stores on five underwing positions. Maximum speed at altitude is Mach 1.6, combat ceiling is 16,305 m/53,500 feet, and climb rate is 160.53 m/sec/31,600 feet/min.

Uncaging the Tigers! Top right Shortly after delivery from California, this F-5E is rolled out of C-5A Galaxy 90010 of 60th MAW on to the transporter. Above right The F-5s, this one (01559) in brown and light sand camouflage, are then taken by special transporter to hangars where... Right Their wings are carefully put on. Below After more checks they're ready to fly (Peter F. Guiver).



The F-5 is produced at the Northrop plant at Hawthorne, California, and from there the aircraft are taken north some 80 kms/50 miles to the Flight Test Center at Palmdale for assembly, painting and test flying. With between three to five hours test flying logged, the machines for the 527th were then transferred to the Air Logistics Center at McClellan AFB, California, where they were packed on special pallets with the wings and tailplanes removed. The first eight F-5Es for the 527th arrived at Alconbury aboard a C-5A Galaxy on May 21, with eight more following at the beginning of June, and the final four arrived on the evening of June 24 (the day of the Press visit).

No time was wasted after the C-5 had landed, and the huge nose opened upwards to reveal the F-5Es in two rows side-by-side. These were then rolled out on to transporters for removal to the assembly hangar. There, the fuselage, wings, and other items in crates were lifted from the pallets, which were then removed, and within 30 to 40 minutes the wings had been fitted to the fuselage, the undercarriage extended and locked, and the aircraft were ready to be towed away. A further week is then spent in connecting and testing all the various electrical, engine, hydraulic and other systems. The aircraft are then test flown.

Although the 527th was activated on April 1 last, its history can be traced back to 1942. In February of that year the 312th Bombardment Squadron (Light) was activated at Will Rogers Field, Oklahoma, equipped with A-20s. After moves within the United States, the 312th was transferred in May 1943 to La Senia, Algeria, for operations in the Mediterranean and Europe. This was the first of 17 bases for the 312th up to May 1945. From 1942 to 1944 the 312th flew A-36s, and in August 1943 it was redesignated the 527th Fighter Bomber Squadron, moving base in that month to Sicily. In 1944 came the P-40, and later the P-47, and after being based in Germany for a short time after the war, the 527th returned to the USA, and was disbanded in March 1946.

However, a new unit was formed in August of the same year at Nordholtz, Germany, again with P-47s. Thence came moves to various bases in Germany (apart from a few months at Langley Field, Virginia in 1947), and in 1950, at Neuburg came the 527th's first jet fighters, in the shape of F-84 Thunderjets. The squadron moved to Landstuhl in August 1952, and in the following year it re-equipped with F-86 Sabres. In October 1954 the unit was redesignated the 527th Fighter Day Squad-



ron, and was eventually inactivated in February 1956. The present 527th is scheduled to become operational in its new task with the F-5E on January 1st of next year.

As mentioned previously, the F-5Es of the 527th are finished in a variety of colour schemes, and these provide good material for modellers. By the first week in July, a two-digit nose code was being added, these consisting of the 'last two' of the aircraft serial number. Even these codes vary in colour, and a summary of markings is listed below:

Representative serial	Camouflage	'Last two' code colours
01534	Two-tone blue/grey	Blue with yellow outline
01544	Three-tone grey	Black with yellow outline
01549	Silver overall	Red with yellow outline
01552	Brown/green/light sand	Green with yellow outline
01559	Brown/light sand	Brown with yellow outline

Larkhill shoot-out

AMONG THE general round of Army displays, the annual Artillery Day held at Larkhill on Salisbury Plain holds a special place. Held usually during early July, the Artillery Day is the occasion when the Royal Regiment of Artillery shows the public exactly what it can do. But the reason the Artillery Day is so special is that the Royal Artillery's activities are so widespread and diverse, the resultant show has a bit of something for everyone. Where else can one see guns blazing away in large numbers, helicopters coming and going at bewildering speed, paratroops and supply landings by Hercules, and tracked vehicles dashing about at high speed? Add a small dash of vintage and veteran and all the fun of the fair and you get a rough idea of what Artillery Day is like.

This year's display followed the usual pattern. A comprehensive static show was laid on over which the FH70 barrel towered. Nearby was the new FH70 limber and other

Nose panel open on F-5E 01534 camouflaged in (from nose) very pale blue, medium grey and medium blue, with off-white under side (Peter F. Guiver).

The 527th forms part of the 10th Tactical Reconnaissance Wing, and will operate alongside the 1st TRS who fly the RF-4C Phantom.

I wish to thank the officers and men of the 10th TRW, the 527th TFTAS, and the Office of Information at RAF Alconbury for their kind help in the preparation of this article.

Peter F. Guiver

new equipment not usually seen was present in the shape of a FV432 carrying the Cymbeline mortar-locating radar. Older gunners could ruminate over 2, 6 and 17 pdr anti-tank guns which were displayed alongside a 3.7-inch mountain gun. A tent nearby contained an immaculate 18 pdr. Apart from the guns there was the full range of artillery radars, met equipment and all the ever-widening range of ancillary bits and pieces designed to help get that important first round on target first time.

But the high spot of the Artillery Day must always be the firing of the guns. For this purpose a natural arena has been formed by arranging stands on Knighton Down from which a magnificent panorama of the Plain can be seen. The show starts by the landing of a salvo fired over the crowd from behind and thereafter the batteries deploy. A new feature this year was the simultaneous delivery of guns by helicopter from each side of the display area. From

The 25 pdr Quad and limber at Larkhill (Terry Gander).





the left the 105 mm Light Guns were landed by Puma and from the right Royal Navy Wessexes landed Pack Howitzers. After this flurry of frantic activity some Hercules disgorged an advance party and another Hercules landed just in front of the crowd to unload a Light Gun and tractor.

After that airborne activity there was a lull while memories were evoked by the sight of a beautifully preserved Quad and limber towing an early 25 pdr across the front of the arena. Then came the massing of the guns as Pack Howitzers were towed into position and the 25 pdrs of the Junior Leaders Regiment were placed into position. A surprise was the inclusion of a Battery of 5.5-inch Gun-howitzers. These World War 2 relics are still in front-line service with J (Sidi Rezegh) Battery of 3rd Regiment Royal Horse Artillery but are now due to be replaced by the Swingfire guided missile.

After that it was gunfire all the way. At one point over 70 guns were firing at once. At other times Bofors banged away at oil drums and low flying Canberras, and an exciting rapid fire contest was held between guns from the eight batteries on parade. Abbots scurried across the arena and at one point engaged a radio-controlled aircraft with their machine-guns. The heavy mob were represented by single examples of a M107 175 mm gun, a M109 Howitzer and a M110 8-inch gun which were able to impress everyone with their range and shell-power. The grand finale was a mass shoot of all the guns in the arena which could not fail to be the highlight of a most impressive and interesting display. For sheer variety, excitement, movement and volume of noise there is nothing in the UK to equal Artillery Day. Roll on next time! *Terry Gander.*



Top of page and right: Another World War 2 veteran still in service, the 5.5-inch gun-howitzer here towed by an FV 11002 10-ton 6 x 6 GS AEC Militant Mk 1 tractor. Top right: M109 firing at maximum elevation. Above right: A 25 pdr of 39 Junior Leader Battery (Terry Gander).



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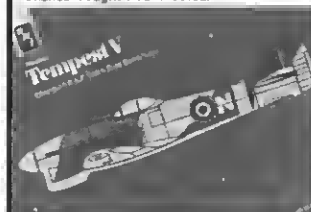
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Michael J. F. Bowyer

Army-air colours 1937-45

Part 13 — Horsa operations commence

IN FEBRUARY 1942 No 38 Wing formed controlling RAF airborne squadrons providing transport for forthcoming operational glider and paratroop forces. Operational crews for the four planned squadrons came from the Exercise Unit.

The first airborne squadron, No 297, formed on January 22 1942 out of the Paratroop Exercise Squadron itself formed at Ringway December 15 1941, and which almost immediately moved to Netheravon where it flew Whitley Vs. The second Whitley squadron, No 296, formed at Netheravon January 25 1942 end moved to Hurn in June. The third was No 295, formed at Netheravon on August 3 1942 and from the outset a glider towing unit. Finally — for the present — came No 298 Squadron formed at Thruxton on August 24 1942, the intention being that this squadron would soon equip with Halifaxes better able to tow heavily laden Horsas that were the Whitleys.

Some of the Whitleys in use had still to be fitted with glider towing gear, and initial towing was of Hotspurs carrying elements of the Air Landing Brigade. It was October before Horsas began to reach squadron service, by which time Horsa pilots were leaving Shrewton and Brize Norton, although they had yet to handle fully loaded Horsas at night.

By August Halifaxes were in great demand for Bomber Command. New priorities were established as a result of which No 298 Squadron disbanded on September 30 after receiving only three Halifaxes. This left 38 Wing with about 60 obsolete Whitleys, quite useless as operational tugs for fully loaded Horsas.

Accepting the shortage of tugs as needing remedial action Air Ministry in June 1942 suggested the Albemarle. Three were loaned to 38 Wing in August 1942. It was found that each could carry 15 paratroops and, whilst not ideal as a Horsa tug, the nosewheel layout of the Albemarle at least allowed it to readily tow off a glider. After some misgivings 38 Wing accepted the Albemarle as the interim Whitley replacement.

Meanwhile 38 Wing were eager to operate. In great secrecy the first glider operation was planned during the autumn of 1942. The Germans were trying to produce heavy water for a nuclear programme which at all costs needed to be halted. This could only be done by ground forces including skilled saboteurs. The four best glider pilots were selected to fly two Horsas, and they needed to be able to handle the gliders loaded and at night for a flight of 800 miles, a formidable task. Halifaxes would tow the gliders, and long-range tow training commenced from Netheravon using three Halifaxes which took off by day and landed at night after long tows. Technical

problems reared, let alone tactical aspects.

The target was eventually revealed as the hydro-electric station at Vermok, central Norway, and the operation was to be flown from Skitten, near Wick in Scotland. Two Horsas each carrying 15 specially trained sappers would take off at dusk. The combinations would fly to Norway and be guided to their landing points by beacons set up by Norwegian agents. After landing, possibly in snow for which possibility there could be no training, they would have a 5-6 hour traverse on foot. Following the attack the troops would make for neutral Sweden and internment.

It was decided to mount the operation on November 19 1942. Thick cloud covered the route on the chosen day whilst at Skitten the clouds were low and it was raining. The Horsas' windscreens had each only two small clear vision panels, and buffeting would probably break the tow ropes. Nevertheless, the task force elected to go even though the glider pilots had never made take-offs at night with fully loaded gliders. Maps for the flight were poor, but fortunately those involved were skilled navigators. There was expected snow on the ground and the first combination could not locate the landing area. They turned back, the tug's fuel load being marginal. Even the tow rope iced up then tug and glider sank into 10/10 cloud. Eventually the rope broke, the glider crashing in Norway where the occupants were captured and shot by the Gestapo. The second tug and glider crashed in Norway. In the crash three of the glider occupants were killed and, again, the others were shot by the Gestapo.

The scene at Brize Norton in 1943 with WAAFS attending to the nose of a Horsa and Whitleys dispersed beyond. One of the latter wears '27' on its nose, possibly in Sky Blue (IWM).



The Horsas involved are believed to have been DP349 and HS114.

Brigadier Gale had already expressed a desire for 2,800 Horsas sufficient for four airborne operations from Britain. It was already clear that the Horsa needed a number of small modifications before issue for operational service. Many could readily be effected, but by late 1942 the problem which had largely rendered the Hotspur unsuitable for operations was apparent, that of rapid exit. It was hard enough for troops to deplane rapidly, but when it came to wheeled equipment the time taken was lengthy. It meant manoeuvring the vehicle or gun through 90 degrees to exit via the forward sliding door, a dangerous activity if the craft was under fire. Any improvements would need to be radical and the airborne forces suggested making the rear fuselage rapidly detachable.

Another alteration required was a strengthened floor and, if possible, integral loading ramps. These items, including possibly a hinged rear fuselage, entailed a considerable amount of design work since they affected the glider's stressing.

On November 20 1942 a meeting of the Airborne Forces Committee quite astonishingly agreed that Horsa production should be cut because of extensive modifications needed to the aircraft. The effect upon the War Office was stunning; coming on the morning of the first Horsa operation it was ill-timed. The War Office replied that they were just about to ask for an extension of Horsa production, and went ahead advising the Directorate of Technical Development of their needs. The answer was that production would be tailored to enable more aircraft to leave the lines incorporating necessary modifications. Previously, on November 16, War Office had asked for studies of the practicability of a removable or swinging rear fuselage — then came the order to cut production from 2,200 to 1,100 Horsas.

By the end of November it was clear that what was required was really a new mark of Horsa with better loading and stowage features. Airspeed began to look into this. Halting Horsa Mk 1 production — the Prime Minister had suggested ending at 1,000



units — would mean wastage of parts for another 1,250 gliders, completion of which could be by the end of June 1943.

The saga of rapid exit from the Horsa carried on into 1943 as production built up. As a simple aid to speed leaving the glider, two axes, a saw and wire cutters were quixotically fitted to each one, hardly ideal tools to employ in the face of enemy fire! Other problems seemed trivial by comparison, but there were needs for a direct tug-glider telephone link, a stronger wing leading edge, parachute equipment for under-carriage jettisoning. Airbrakes or a braking chute were deemed no longer necessary for the Horsa's huge flaps slowed it sufficiently providing a very steep angle of descent.

American plans for their troop glider, the Waco CG-4, had now crossed the Atlantic. An upward hinging nose had been decided upon for the Hamilcar, the British tank carrying glider, and the CG-4 featured this too. During April 1943 Army Co-operation Command expressed preference for such a feature on the revised Horsa. Events were, however, to prove that such exit was far from ideal. It was at this time that operational tactics for the glider force were being explored. To ease concentration on the Landing Zone one idea pursued was the fitting of Rebecca which would allow the gliders to home onto a beacon set up by an advanced party. It came to be fitted in over 300 Horsas.

Lest an impression be gained that the Horsa was unsuccessful, it is only fair to point out that Airspeed had produced a potent glider meeting the requirements laid down. Apart from 25 armed men a variety of loads could be accommodated such as a 40 mm Bofors gun with 240 rounds of ammunition, or a 5 cwt car, 6 pounder anti-tank gun, 75 mm pack howitzer, motor cycle and various combinations. Always it would carry two pilots and could carry up to 14 x 350 lb panniers in wing cells. Load combinations could be lifted up to 7,200 lb in weight.

Experience with the Horsa revealed desirable features to incorporate in a new design which should still be light enough to be towed by a two-motor tug, could easily be shipped abroad, have hinged nose or tail, chin towing, strong floor, lowest possible height off the ground, allow for parachuting simultaneously with a drop

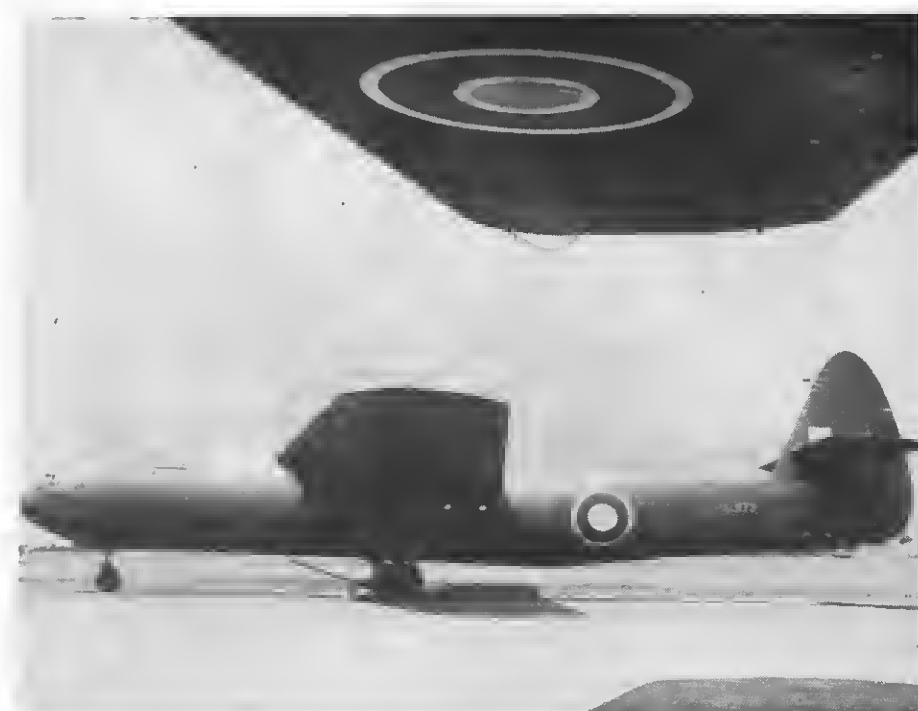
from the tug and be suitable for outside storage. Insufficient attention had been paid to all these points when drafting the original Horsa specification.

Storage of the completed gliders assumed ever greater importance. In March 1943 the approximate strength of Bomber Command was 1,000 aircraft which filled available space on bomber airfields. Bomber Command was now asked to find room on its airfields for up to 1,000 gliders each as large as a medium bomber. Since the gliders were constructed of wood it was feared that they might deteriorate so much as to be useless. They would make ideal incendiary targets unless well dispersed and Netheravon was packed with Horsas. Only large bomber airfields could accommodate so many dispersed, picketed Horsas. Dispersed they must be so, after

A Whitley V over two Horsas in standard operational camouflage. Nearest is DP389 used by the HGCU October 1942 to January 1943, and again September 1943 to December 1944 (IWM).

delivery usually to No 1 Heavy Glider Maintenance Unit, Netheravon, the gliders were towed by Whitleys and Albemarles to airfields in eastern England. Maintaining them became the task of No 2 HGMU Snailwell and detached units known as Glider Maintenance Squadrons took care of batches of 32 Horsas placed at Sculthorpe, Foulsham, Lakenheath, Oulton, Feltwell, Marham, Wrattling Common, Mildenhall, Stradishall, Balderton, Fulbeck, Langar, Woolfox Lodge and Cottesmore. During September and October 1943 a further 71 were taken to Scottish airfields,

LJ173 in profile wears standard Horsa camouflage. The roundel evident on the machine in the foreground is a remainder from the time when that aircraft had yellow/black under wing stripes whereon the yellow was over painted black in 1943 (IWM).





such stations as Montrose, Brackla, Errol and Perth. Movement of the main group of Horsas to the eastern bomber bases for storage took place mainly in April-July 1943. Usually they were stored without belly skids and seats. Soon they presented a forlorn sight for their control surfaces were removed to avoid wind damage.

At 38 Wing, planning for operations was underway, for advance warning had been given of operational deployment. It was clear that as the large gliders touched down their landing zones would become quickly cluttered, which meant the most skilled pilots needed to carefully place their gliders first. Disgorging brought the expected problems, particularly if the glider was damaged on landing.

Soon came a new face to Horsa usage. Rather than leave the gliders unused it was decided to employ them to assist unit moves. A memorable such occasion concerned the transfer of XV Squadron and its Stirlings from Bourn to Mildenhall. Whitelys towed the gliders to and fro, and I well remember hurrying to Bourn to see the fun. As was the case throughout the war, the gliders carried no unit identity markings on their bomber camouflage of Dark Green, Dark Earth/Matt Black (very rough in finish on Horsas well into 1943). Fuselage serials were Dull Red. Some of those at the HGC Brize Norton did have individual identity for

A Horsa at the Syracuse LZ. The nose wheel has collapsed even in a relatively good landing area, and just how difficult it would have been to exit from the nose can be seen (IWM).



training purposes, but apart from tug marshalling numbers Horsas carried no unit markings. A handful of them were initially painted at MUs with upper surfaces of Dark Earth and Mid Stone for Middle East employment. Most were stored at Mildenhall, but they reverted to the normal colours in the autumn of 1943.

In March 1943 38 Wing was warned that an overseas operation, in which it would play an important part, was pending. It would operate under the US North African Troop Carrier Command in what would be mainly a paratroop drop. Waco CG-4s would comprise most of the force, although the CG-4 carried only half the load of a Horsa. The latter was needed mainly to carry vehicles and guns, because the Waco could not carry both a gun and a jeep. Getting the Horsas to the operational area was going to be difficult. They could only be ferried there by air, towed by Halifaxes. It was estimated that the range of a Halifax towing a Horsa was 1,000 miles, making the feat just possible. No 295 Squadron would tow up to 36 Horsas to Rabat Salé, Morocco. Then they would be taken to airfields around Kairouwan. Halifax crews trained making long tows with Horsas which often landed at night, then took up operational siting at Holmsley South.

In mid-May 1943 the advance party left to work up a training base at Froha where Albemarle tugs would be stationed. It was hoped that at least 30 Horsas would be successfully carried in Operation Beggar, but it appears that only 28 made the journey, the first crashing by the runway at

Horsa LG816 picketed out in North Africa awaiting the Sicilian adventure. Upper surfaces are Dark Earth and Mid Stone. Note that this machine in operational state has a skid fitted (IWM).

Rabat. No 295 Squadron's Halifaxes had extra belly fuel tanks, making their load beyond the capability of three engines. All towing across Biscay and along the Spanish and Portuguese coasts had to be by day, night operations were too difficult. Beaufighters could give cover only for the first three hours of the journey.

The task began on June 3 when four combinations left Portreath. One abandoned the journey due to bad weather, and the tow rope of another broke causing the glider to ditch although the crew were luckily rescued. On another occasion Ju 88s attacked a combination. The Horsa had to be released and after 11 days at sea the crew were picked up. It is said that two Halifaxes were lost and four Horsas, and that 27 out of 31 despatched reached Salé and of these 22 flew on to Froha. For the Halifax crews the round trip took about 40 hours.

From Froha the Horsas were flown to Kairouwan, a difficult journey over mountains which put tremendous strain on the crews involved, since the hot air made transit exceedingly bumpy even in the early hours of the day when the air was coolest. It led to engine overheating problems.

The operation for which the forces assembled was the invasion of Sicily. On

Continued on page 82



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RICHARD KOHNSTAM LTD., 13-15a HIGH STREET, HEMEL HEMPSTEAD, HERTS.

the night before seaborne forces landed, a Brigade of 1st Airborne Division would land in gliders near Syracuse to seal off the port and hold a vital bridge. Next night a paratroop force would land near Augusta and on the following night paratroops would land near Catania. Horsas would take part in the first assault and the main force in anything up to 375 Wacos towed by C-47s. Misgivings were held that an area around Syracuse was chosen for it was rocky and dotted with orchards whereas by Catania the ground was very suitable. CG-4s were quite incompatible with the Horsas with their flat glide approach, and were apt to float along and had no flaps. Their towing speed was limited to 150 mph which made them too slow for the Albemarle. Their floors were weak, and it was relatively easy for the nose to jam on opening. Their tubular construction was not ideal. The Americans insisted on a release point some 3,000 yards from shore to avoid ground defences, and this was not favourable to the Horsas.

The first operation by the 1st Air Landing Brigade was mounted on 8/9 July 1943. The plan was still for the landing near Syracuse so that the Ponte Grande could be seized, and the western outskirts of Syracuse sealed off whilst US paratroops dropped further west from C-47s. The airborne force of 1,200 men flew in 137 gliders — 127 of them Wacos — towed by 28 Albemarles, 7 Halifaxes and the rest C-47s, the British tugs being drawn from 296 and 297 Squadrons. The force passed the south east tip of Malta thence flew to south east Sicily and along its east coast to the LZ by Syracuse. The inexperience of the C-47 pilots was partly responsible for 69 gliders landing in the sea, for they had cast off 2 miles from shore. In high winds and semi-moonlight, 56 gliders landed well away from the LZ, and only 12 landed on the specified area all of them towed by RAF crews. One glider load seized the bridge and held it until overcome in the afternoon, then seaborne forces soon secured it.

A second glider landing took place on 13/14 July, 107 aircraft being used, 17 of them towing gliders. It was unfortunate that as they reached the LZ some Ju 88s were attacking shipping and the shots from the defenders burst among the airborne force. Twenty-seven aircraft with paratroops lost their way, 19 made no drops but 13 gliders landed on the correct area and their occupants seized another vital bridge this time near Catania.

Once the operation was concluded it was possible to survey the Sicily landing area. Some of the Horsas had damaged noses as was forecast. It was even more essential now that detachable or swing tails be fitted in time for the landing in Fortress Europe.

Halifaxes used for Operation Bigger

DD:DG392, EE:DG393, EE:DK130, KK:EB132, MM:DJ989, NN:EB139,00:DG387, PP:DG393, QQ:DG396, RR:DG391, SS:EB130, TT:DG384, UU:DJ994, VV:DK131, WW:DG388, XX:EB135. Final tows left Britain on June 21, 1943 on the day that the Albemarles of 296 Squadron set out for Africa.

The Horsas known to have been ferried out for the operation are: DP344, DP574, HG916, HG974, HS145, LG666, LG674, LG729, LG776, LG816, LG827, LG773, LG833 (lost 21.6.43), LG855, LG890, LG919, LG924, LG932, LG943, LG945, LG976, LG980, LG994, LH113, LJ128, LJ169, LJ171, LJ174. None wore special markings for the Sicilian operation. □

British Army uniforms

1660-1900

The Light Dragoons 1784-1800 by Bryan Fosten

IN APRIL 1784 orders were issued (WO 3/26) which dramatically changed the appearance of British Light Dragoons. Until that time they had been dressed in red with simplified and shorter coats and leather helmets. Their new clothing consisted of a dark blue short jacket over which a dark blue sleeveless 'shell' was worn. Under the jacket they wore a white flannel waistcoat and the new costume was completed by leather breeches, black gaiters and the new leather peaked helmet with the large bearskin crest usually referred to as the 'Tarleton' by modern costume historians.

The jacket and the 'shell' were made of dark blue cloth, the collar and the cuffs of the Royal Regiments were red and those of the other regiments in the facing colour of the unit.

The jackets and the shells were ordered to be looped on the breasts, and edged, with white thread cord and to be lined with white except for the 11th and the 13th Regiments whose linings were buff. Inspection reports point to the fact that several of the other regiments followed suit and had turnbacks in the same colour as their facings. The under waistcoat was made of white flannel, with sleeves and cut so that it buttoned within the waistband of the breeches.

Breeches were ordered to be 'pure buckskin'. The officers and the quartermasters were permitted to wear coats still patterned after the old style for full dress, but now in blue cloth. On manoeuvres and on campaign they wore the jacket and the shell. However, it seems that the officers wore under-waistcoats of blue cloth with loops on the breasts and their shells had sleeves. The officers had silver cord looping and edging except for the 13th Regiment who were permitted to wear gold lace.

Sergeants were ordered to wear silver (gold for the 13th) chain looping and the corporals a silver or gold chain looping around their cuffs.

Trumpeters wore the same pattern jackets and shells as the troopers but in the facing colour of the regiment with red collars and cuffs and silver or gold lace down the fronts, sleeves, and seams instead of cord.

Light Dragoons were ordered to wear blue, white-lined, cloaks instead of the red, lined blue, worn by the remainder of the cavalry.

A jacket, shell and flannel waistcoat of the old British 16th Light Dragoons was preserved in the famous 'Zeughaus' in Berlin prior to 1939.

The jacket was a hip-length, single-breasted dark blue coat with a standing collar and pointed cuffs. The collar and the cuffs were red. Down the breasts were three rows, each of 13 white metal ball but-

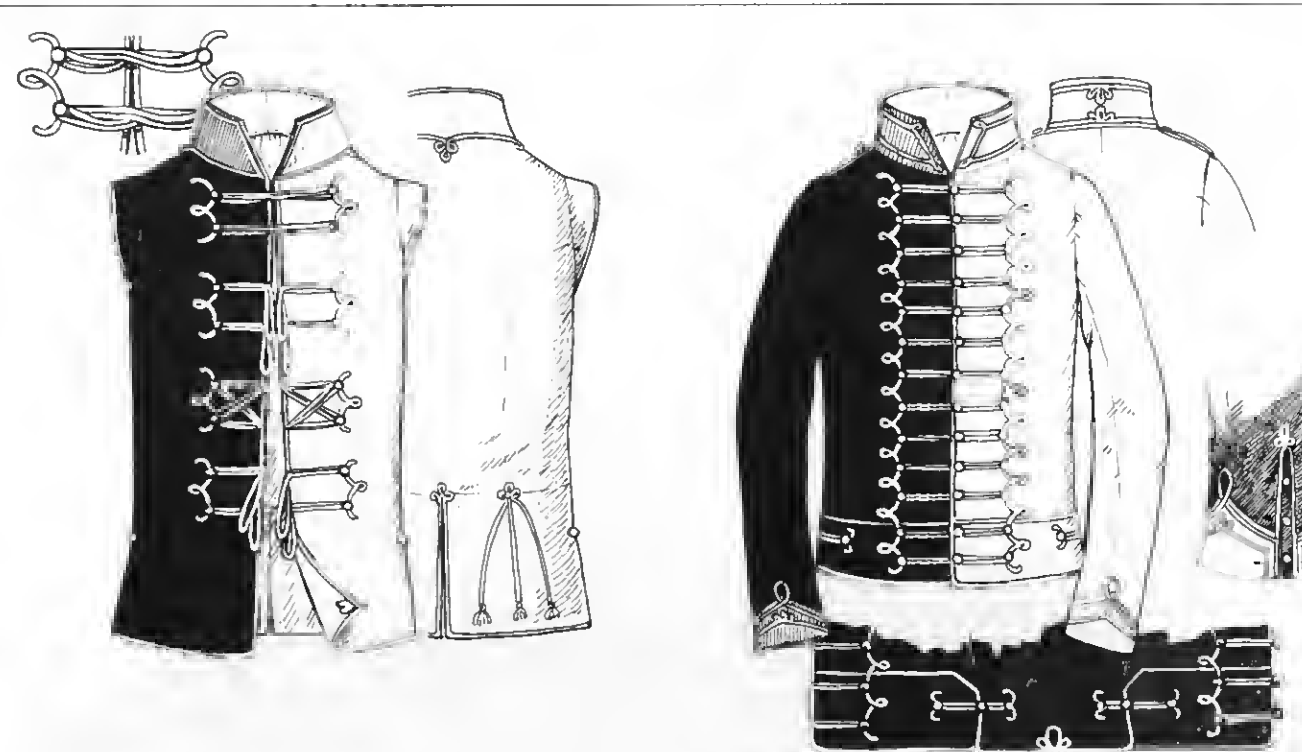
tons. Between these buttons was a simple double frogging of white cord as illustrated. On each hip were a further three buttons with white cord decoration. The collar and the cuffs were edged with, and had an inner lining of, white cord and the cuffs opened on the back seams of the sleeves with three buttons and holes, the slit edged with the same cord. This jacket was worn over the flannel waistcoat. The sleeveless dark blue shell was worn over it.

This garment, which was slightly longer than the jacket, was also furnished with a standing collar and had small blue 'wings' which protruded over the under jacket sleeves as shown in the illustration. The standing collar was red and had a simple white cord edging. The shell was further decorated with four pairs of white metal buttons on each breast. Each pair of buttons was provided with white cords which were worn in the fashion shown in the drawings. The upper pairs of loops were usually worn closed across the breast, the remainder left open with the shell falling away from the body to reveal the jacket beneath. The skirts were furnished with a small button on each hip which allowed the fronts to be folded back. This folding back revealed triangles of the linings which were decorated with small red cut-out hearts. The rear of the skirts of the shell each had a white cord decoration comprising a spray of three white cord frogs spreading downwards towards the bottom edges of the garment. At the hips the spray started with a simple trefoil and each frog ended in a tassel at the lower end. The back central vent was edged on both sides with white cord and this slit also terminated in a cord trefoil at waist level. There is evidence that this old shell originally had shoulder straps and these are certainly shown in other contemporary prints and paintings.

A sergeant, in a painting of a group of the 10th Light Dragoons by George Stubbs, wears the shell over his jacket and this figure shows clearly that the upper garment had shoulder straps in the facing colour, used to support the equipment. A miniature of the Prince of Wales as Prince Regent and in the uniform of the 10th Light Dragoons painted by Cosway, shows the officers' version of this uniform. George wears a sleeved shell over a laced waistcoat. He has elaborate silver fringed epaulettes and the pairs of loops on the shell are silver and terminate in tassels.

The white flannel waistcoat had two rows of small buttons down the front, hip pockets, a standing collar and simple round cuffs. The collar, pocket flaps and the cuffs were edged with blue piping.

The sergeants' sash was worn under the shell and tied over the jacket when the shell was worn unfastened but over the shell



Above left Front and back view of the 'shell', showing method of fastening the loops across the breast. Right Front and details of the jacket. Note how the points and loop of the cuff decoration are to the front of the sleeve. (From the jacket of the 6th Light Dragoons that was in the Zeughaus, Berlin, photographs and written notes by PWR.)

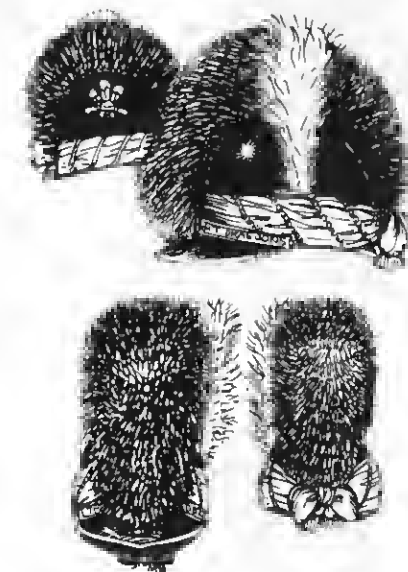
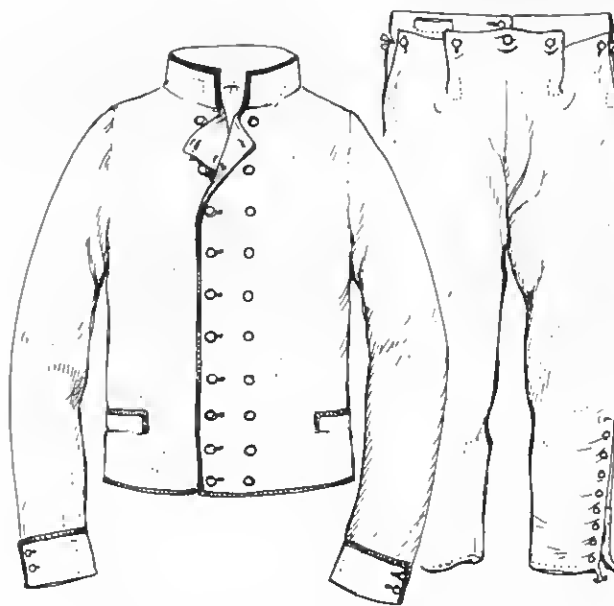
when it was closed. On dismounted duties the shell was apparently discarded and the sash was then worn over the jacket and tied on the right hip.

Stubbs provides us with a fine representation of a trumpeter. From this we can see that trumpeters wore tall fur caps with a leather peak, probably edged with silver, although this is not very clear. A white plaited cord is looped around the head-dress caught high on the right side with pendant tassels low on the right. On the left

side of the cap is a feather of the facing colour. Stubbs' painting shows only the front view of the trumpeters' headdress and gives no indication of the detail of the rear of the cap. However, from the other scanty evidence that is available, such as closely examining other paintings of Light Dragoons and the figures, often lightly sketched, in the rearground, it appears the fur headdress resembled the tall muff type of headdress which later became the standard hussar fur cap. The top may have had

a facing colour cloth patch or even a short bag with a tassel but this must be pure conjecture until better evidence comes to light.

The jacket and shell of the Stubbs' trumpeter are in the dull yellow facing colour with scarlet collar and cuffs. The decoration is in either white or silver cord and there is extra lace on the edges of the red (white laced) wings of the shell and on the sleeves of the underjacket. The latter has seven chevrons of blue and white or silver cord chevrons which are decorated with



The waistcoat and breeches (16th Light Dragoons). To the right, front, side and back views of the leather helmet.

fringed white wool. The seams of the sleeves are overlaid with cord and the cuffs have a double band of white cord about half an inch apart. Over the right shoulder the trumpeter carries a narrow red baldric edged with the facing colour and blue and with a white or silver chain decoration down the centre. This baldric has an oval silver breast plate without any visible device. This belt supports a sword. The trumpeter stands to attention but there is no sword scabbard visible below the hand as shown in the painting of the dismounted sergeant, and I assume this indicates that the sword blade was sharply curved. What little can be seen of the hilt suggests an oriental cross-hilted weapon which were much favoured by the cavalry trumpeters of the period, many of whom were foreigners or blackamoors.

Light Dragoon Farriers wore special bearskin caps with the fur running from side to side rather than from back to front. On the front of their caps they had a horse-shoe badge. They carried churns or buckets instead of holsters in which horse-shoes, hammers, nails, shoes and pincers were carried. Their horse furniture over these buckets was black bearskin with badges of horseshoes on the foreparts and

General view of a Light Dragoon of the period wearing the shell. Note the cuffed boots.



hammers and crossed pincers on the housings which were the same as the men's (ie in the facing colour). They carried an axe on their left hip in a white leather belt carried over the right shoulder and wore a white apron which was rolled back on their left side when they were not working.

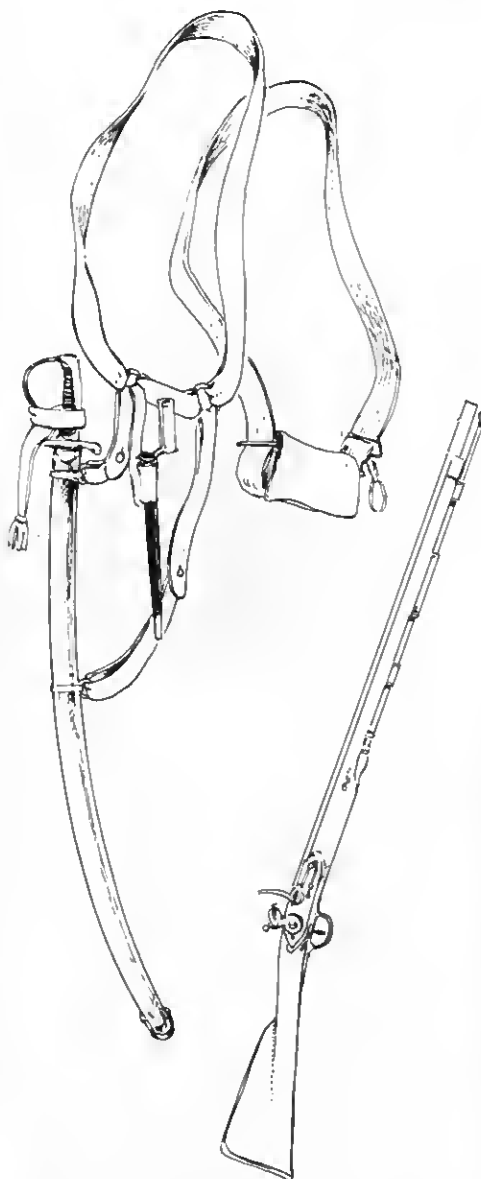
The trumpeters were armed with a pair of pistols and a 'scimitar' sword as described. Their furniture was the same as the troopers'. They carried their trumpets over the left shoulder and hung on their backs. They were usually mounted on greys. The trumpets were brass, the trumpet cords crimson mixed with the facing colour.

Officers were armed with a pair of pistols with 9-inch barrels and wore their 'crooked swords' on a white leather belt worn over the left shoulder, the sword suspended from two slings. They wore no gorgets and their coats were decorated with silver or gold lace, and the badges and devices on their helmets were silver-plated. Around their waists they wore crimson silk net sashes tied with the long tasselled ends hanging on the right side. Their bridles, bits, bridoons, surcingles, gloves, boots and spurs were all to be the same pattern as their men's.

The new pattern Light Dragoon helmet was first described as a 'cap' made of boiled blackened leather. It had a leather peak edged with silver to protect the eyes and was furnished with a pleated cloth turban in the facing colour kept tidy by a fine chain which was looped around and around it. The turban had a 'cape' which could be let down to cover the neck but this is usually shown tidily arranged in a bow at the rear. Public Record Office reference WO/3/17 informs us that this cap was approved in 1788 although it is known to have been in use in some units long before that date. The large feathers worn on the left side were in the facing colour until about 1794 except for those regiments faced white in which case the feathers were mixed with red. After 1794 feathers were white over red for all regiments although some continued to wear the old style.

This heavy helmet was surmounted by an imposing black bearskin crest which ran from front to back. On the right side the cap had a silver-plated regimental device. Every regiment had its number in plated silver affixed to the front of the cap, normally in the form of a long metal scroll above the peak. The officers also wore this cap, apparently with a larger crest and with larger feathers, although this might be artist's licence. The peaks of the officers' caps were shaped to a point and curved slightly upwards. Officers were already taking fur trimmed 'upper jackets' into use and wearing them like the pelisse, slung over their shoulders.

In 1790 belts were reduced in width from three inches to 2½ inches broad. Some regiments had belts even wider than three inches before that. A series of water colours in the collection of the Marquis of Cambridge, MCVO, and dated about 1787, show very wide white belts. These paintings also show a very unusual way of wearing the equipment when dismounted. The troopers do not wear the sword but carry the bayonet. The bayonet belt is worn over the right shoulder and a belt with a carbine swivel over the left. An extra long version of the white cartridge box is worn on a nar-



The personal equipment based on the paintings of Stubbs, Wheatley and Scott. The 'Brown Bess' carbine shown here was replaced by the 'Paget' carbine in 1800.

rower white waist belt and over the stomach. All the men have a rectangular white metal breast plate on the swivel belt. This is interesting as it differs from the oval breast plate worn by the trumpeter of the 10th painted by Stubbs. Other paintings show smaller versions of the cartridge box worn on the same belt as the swivel and with two white leather buttons retaining the lid. The painting by Wheatley of Brighton Camp shows a good view of the left side of a mounted trooper. This indicates the method of carrying the bayonet and the sword. Note that Stubbs paints his dismounted trumpeter, sergeant and trooper in very short half gaiters while his mounted sergeant wears knee length boots although the troopers in the Marquis of Cambridge's water colours (probably by Dayes) show the men wearing knee length black gaiters.

About 1790 efforts were made to provide the Light Dragoons with specialised clothing for the tropics. In January 1796 the 19th Light Dragoons were ordered to be

Continued on page 86

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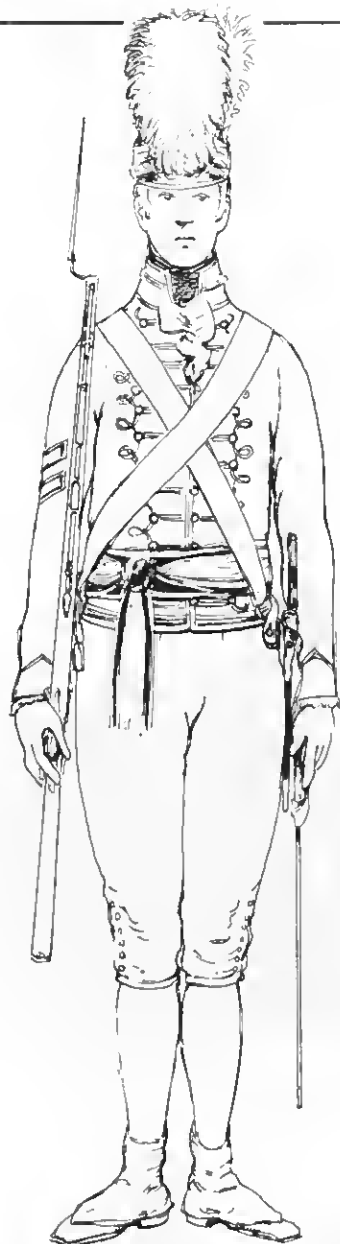
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Above Sergeant of the 11th Light Dragoons wearing the jacket and short gaiters. From Stubbs painting. **Right** 10th Light Dragoon Trumpeter from Stubbs painting, showing the distinctive muff-like, peaked cap.

dressed in grey instead of blue but with the same yellow facings. Indeed the clothing of the Light Dragoons proceeding to hot climate stations in Africa and the Indies were ordered to be as follows: 25th — Grey with scarlet collars and cuffs; 27th — Grey with white collars and cuffs; 28th — Grey with yellow collars and cuffs.

Subsequently there was some disagreement between HM the King, the Commander in Chief and the Horse Guards Headquarters and several letters were despatched rescinding then confirming and again rescinding the order that Light Dragoon regiments in tropical stations should wear grey. Finally the Commander in Chief won and in August 1796 an order was sent to the Commanding Officers of the 8th, 19th, 25th, 27th and 28th Regiments informing them that in future they were to wear grey.

A list of Light Dragoons in 1790 gives the following information:

Regt	Facings	Lace	Turbans
7th	White	White/Silver	White
8th**	Red	White/Silver	Red
9th	Buff (and linings)	White/Silver	Buff
10th	Yellow	White/Silver	Yellow
11th	Buff	White/Silver	Buff
12th	Buff	White/Silver	Buff
13th	Buff	Yellow/Gold	Buff
14th	Orange	White/Silver	Orange
15th	Red	White/Silver	Red
16th	Red	White/Silver	Red
17th	White	White/Silver	White
18th	White	White/Silver	White
19th**	Yellow	White/Silver	Yellow
20th	Yellow	White/Silver	Yellow
21st	Yellow	White/Silver	Yellow
22nd	Red	White/Silver	Red
23rd	Yellow	White/Silver	Yellow
24th	Yellow	White/Silver	Yellow
25th**	Red	White/Silver	Red
26th*	Blue	White/Silver	Blue
27th**	White	White/Silver	White
28th**	Yellow	White/Silver	Yellow
29th	Pale Buff	White/Silver	Pale Buff

*This regiment had green facings until 1796.

**These regiments were dressed in the Tropical French Grey jackets.

The regiments serving in the tropical stations soon found that the heavy leather helmets were also unsuitable and these were finally withdrawn and replaced by caps made of tin lined with linen.

It is interesting to note that the French Grey jackets worn by the Light Dragoons in India proved so successful that in due course it became the standard colour of the uniforms of the native regiments of Light Cavalry up to the Indian Mutiny.

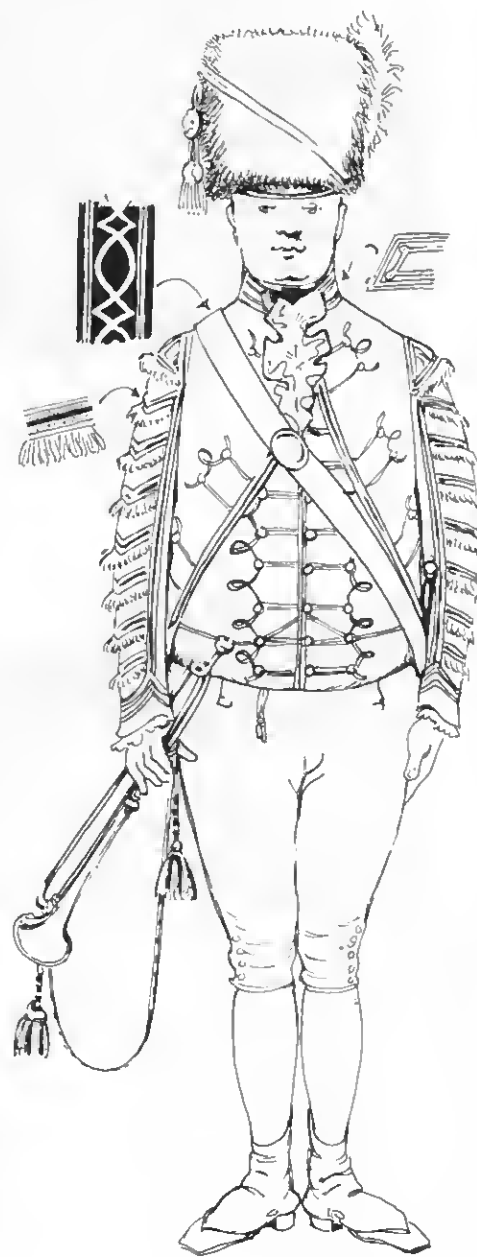
By 1798 senior NCOs of Light Dragoon regiments were wearing metal scaled epaulettes and shoulder wings as a distinction of their grade. In 1797 light cavalry serving in the West Indies were issued with pairs of blue lightweight pantaloons to wear instead of the heavy buckskin breeches.

By December 1799 a new pattern jacket had been made up and submitted to the Inspecting Board (GOLB Vol 365). This was the single garment replacing the old shell and under-jacket. A single-breasted short waisted jacket with loops of lace across the breast, it became the standard Light Dragoon and subsequently the Hussar jacket worn by British light cavalry during the Napoleonic Wars.

The carbine carried by the Light Dragoons was modelled on the weapon designed by General G. A. Elliott of the 15th. The weapon had a 2 foot 4 inch barrel and was adapted to accept the bayonet and had a special rammer fitting to keep the rod in position. The 16th were armed with a slightly longer weapon with a 3 foot barrel which was designed by their Colonel.

The Light Dragoon pistol had a 9-inch barrel, a simple butt plate and a wooden rammer with a large brass head.

The Light Dragoon sword had a 36-inch blade curved in the centre 1 1/4 inches from the straight line. The blade was 1 1/2 inches wide at the shoulder and about 3/8 inch thick and was sharpened to about 11 inches from the point. The shell guard was a simple stirrup bow and the grip black with steel binding. Sword knots were white leather for the troopers. White leather with a gold tassel for the sergeants and all gold bound with crimson silk and with a bullion tassel for the officers. □



Sherman 'Crab' flail tank

Modelled from the Airfix kit by Richard Muggeridge

THE SHERMAN Crab Flail, based on the conventional gun tank, was designed with a flail equipped with 42 weighted chains arranged in spiral formation around the flail drum, to ensure that the top of the Teller mine was struck without any chance of error. The flail drum could be locked in an elevated position for travelling and there were serrated cutters attached to the drum for pulling down barbed wire entanglements.

The model itself is a fairly advanced project and is not for beginners, but if due care is taken the end result justifies the intricate work involved.

The actual vehicle on which this model is based is preserved in the RAC Tank Museum at Bovington Camp, Wareham, Dorset and my thanks are due to Mr N. W. Duncan, the curator, who dug deep into the museum archives to help me write this article.

The Airfix Sherman is used as the basis for this model and is assembled as normal with the omission of the hull machine-gun. It is best to paint the suspension and add the tracks before assembling the mine flail attachment.

The first stage, represented by Figs 1 and 2, is the addition of the frame to the hull front. The framework is made from 10 thou plastic card and fixed in position by microstrip brackets as seen in one of the photos. The flanges on the top were made from microstrip or carefully sliced 10 thou plastic card. The round beam across the hull is most easily made from filed Fujimi sprue or similar material with microstrip wrapped around it as shown representing the fittings to the hull.

The arms cemented to the sides of the hull, shown in Figs 3 and 4, are made from

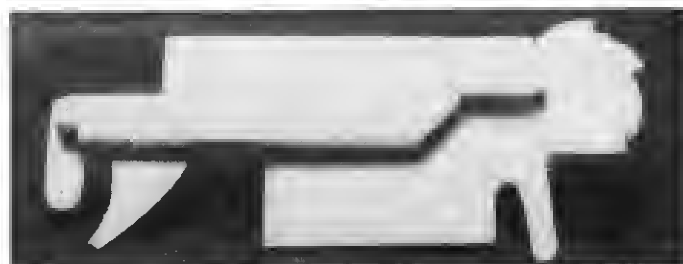
heads on the hull front (see Fig 7).

When the shield is in position, four microstrip stays reaching from the hull to the inside of the curve are added (see Fig 6) and a second beam cemented firmly to them. The brackets inside which the beam pivoted when the flail was lifted are represented by microstrip (see Figs 6 and 7).

Next I made the arm which supports the left-hand end of the flail drum. The detail of the arm, to which is attached one of the wire cutters, is seen in one of the photos and Figs 8 and 10. The first lamination, on the inside of the arm, is the only one to run the entire length of it, as the forward end is open at the front and side with a top and bottom of 20 thou plastic card. The shape of the bracket holding the arm to the beam in front of the blast shield is shown in Fig 8 and the cross represents the axis of the beam behind it. A similar cross in Fig 9 represents the same axis behind the right arm which is attached to the beam by an identical bracket. Leave the left arm separate until the powered arm has been attached because the model comes in for a good

Top of page Shermans and Sherman flails of the Lothians Border Horse, 79th Armoured Division, advance near Caen, summer 1944. One of the photos from Bruce Quarrie's forthcoming Tank Battles in Miniature 3: A wargamers' guide to the North-West European Campaign 1944-1945 (via Peter Chamberlain). **Below** Sherman flails, the nearest bearing the number M5472 on its side and the name 'Contouring Crab' on its turret, return from a mission near Harfleur, September 1944 (Peter Chamberlain).





Various views of the author's model during assembly, showing the frame on the hull front (Figs 1 & 2), the two arms supporting the drum (Figs 8-10), and detail of the powered arm in place on the model.

deal of handling in subsequent stages. The wire cutters are made from 20 thou and the smaller circles from 10 thou. Next comes the right arm.

The rear engine housing on the hull side is made from laminated card and cemented firmly in place. The construction of the arm can be best understood from Figs 9, 10 and 11 and the photos. Laminated card is used throughout. The lower piston is filed from soft sprue and attached to a strut of microstrip which reaches to the track as seen

An assault on the German garrison in Le Havre by the 152nd Infantry Brigade accompanied by 'Funnies' from B Squadron, Lothians Border Horse, 79th Armoured Division. Visible are two Sherman Crabs, Churchill bridgelayer with small box girder bridge, and Churchill AVRE with Petard mortar (Peter Chamberlain).



in Figs 6 and 11. The front housing, to which the drum is attached, is separated from the main arm by a small rectangle of 20 thou (see Figs 9 and 10). The wire cutter is attached to the engine housing with a small circle of 10 thou as a spacer. The side blast shield is cemented to the underneath of the arm along the inside edge. Note that the gap between the front engine housing and the arm is filled with a piece of 20 thou and a small bracket attaches the shield to this. A similar shield may be attached to the left arm although the vehicle at Bovington lacks one.

The locking pin, situated on the end of the lower supporting member and above the front road wheel, is made from 20 thou as is the curved fitting in front of it to which the lower piston is attached by a notch in its end (see Fig 11). The tapering piston sleeve and upper piston are then attached.

Before fixing the left arm in place the flail drum itself should be made. This is best made from a section of plastic tube such as a felt-tip pen casing of the correct diameter.

Fig 12 shows the arrangement of the chains on the drum. These are 1.5 cm in length overall with small rounded weights on the ends. They can be made from Armtec 1:76 chain with small weights of body putty on the ends. If Armtec chain is not available a good substitute is fusewire chain which can be made in the following way. Taking a length of fine fusewire find the middle and loop it lightly around a pin, leaving two equal ends which must then be twisted together twice. Place a second pin between the two ends as close to the first as possible, and then twist the ends around it twice in the same direction as previously. Repeat the process, leaving the pins in the holes. When the pins are removed you will find that the loops in the wire resemble chain links quite closely. This type of chain has the advantage not only of availability but that it is rigid and can 'freeze' in a static state. If wire chain is used, the ends of the wire can be pushed into holes in the drum made with a red-hot pin. Once the holes have been made, fill the drum with body putty or Plasticine and push the wires into it. Plastic chains may be cemented directly to the drum.

The model is finished in olive green except for the flail and chains which are semi-matt black. The weights on the chains are red. Be careful how you paint wire chain since the links easily fill up with paint.

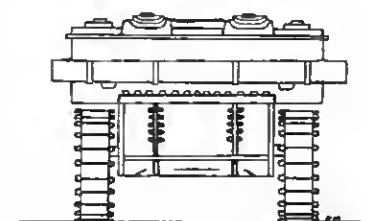


Fig 1

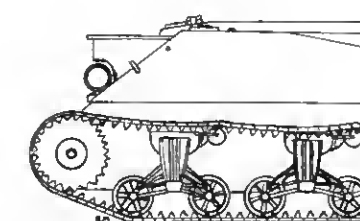


Fig 2

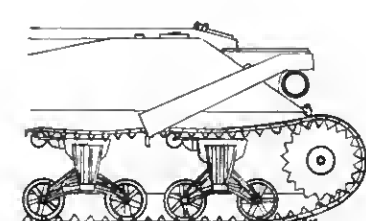


Fig 3

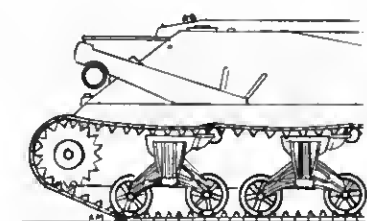


Fig 4

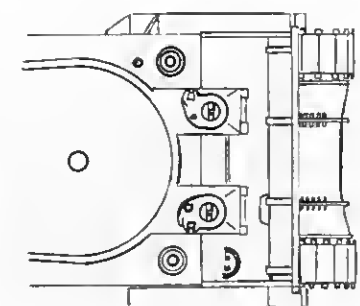


Fig 5

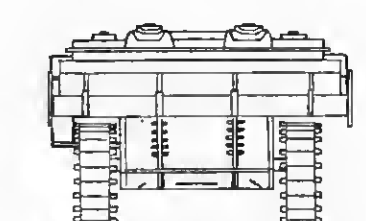


Fig 6

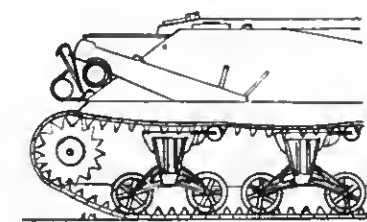


Fig 7

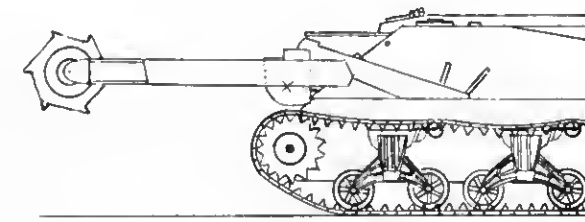


Fig 8

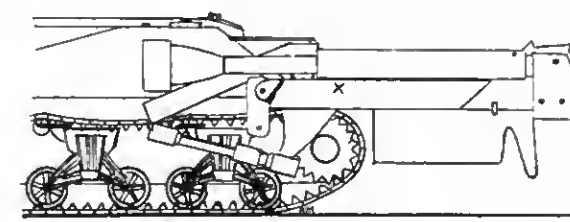


Fig 9

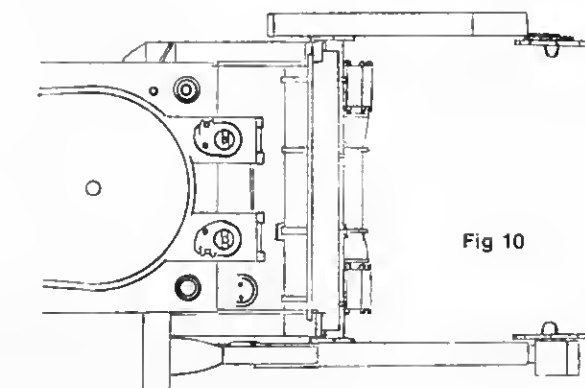


Fig 10

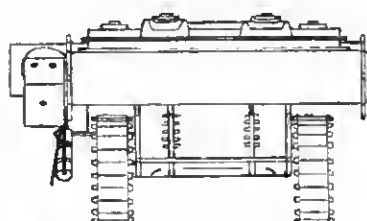
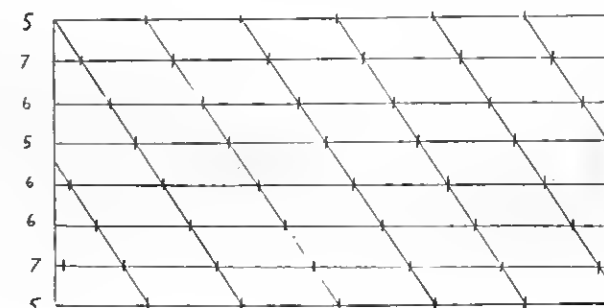


Fig 11

Right Blast shield template



Fig 12



All the drawings on this page are to 1:76 scale except Fig 12 which is twice the scale of the model and represents the drum slit along and opened out to a rectangle. The short vertical lines represent the chain lug centres, and the top and bottom rows of chains are in fact the same row, the line along which the cylinder is cut.



NIGHT FIGHTERS

This month, the Defiant, Bf 109 and Fw 190 modelled in 1:72 scale by Bryan Philpott

MOVING FORWARD in time to World War 2, we can find another day fighter that was pressed into service as a night fighter, but unlike the Camel this conversion features an aircraft that was not a success by any stretch of the imagination in its original designed role but by comparison had more luck in its nocturnal activities. This machine was the Boulton Paul Defiant.

With the benefit of hindsight it is easy to see that the Defiant was an anachronism that need never have happened. The practise of using a two-man crew in a single engined fighter, one to operate the guns, the other to fly the aircraft, proved successful in the early days of World War 1, but as progress was made even those early examples of aerial weapons had to give second place to the fast, manoeuvrable, single-seat scouts. It is odd therefore that as late as the 1930s the RAF was still pursuing the design of such a fighter.

The power-operated turret with its four-gun armament was to prove successful as defensive armament for bombers, but as an offensive weapon it was totally ineffective.

The Defiant was designed to Air Ministry

Specification F9/35 and can trace its ancestry back to the time Boulton Paul successfully married a power-operated turret to their Overstrand bomber. The use of a rudimentary turret on the Hawker Demon also influenced the Air Ministry who foresaw a devastating weapon in the two-seat fighter equipped with a power-operated turret.

The Defiant was similar in shape to the Hurricane, an asset that was to stand it well in its first encounter with the enemy, but it weighed over half a ton more than the Hawker fighter and its reduced wing area gave it a higher wing loading. The prototype, K8320, flew for the first time on August 11 1937 in the hands of Cecil Feather. Its 1,030 hp Merlin 1 engine gave it a top speed of over 300 mph which was more than comparable with contemporary single-seat fighters.

The second prototype flew in May 1939 and was powered with an updated Merlin 11; trials with both aircraft indicated that the basic design was sound, the only addition necessary being an increase in fin/rudder area, in which respect the pro-

types differed from the production versions.

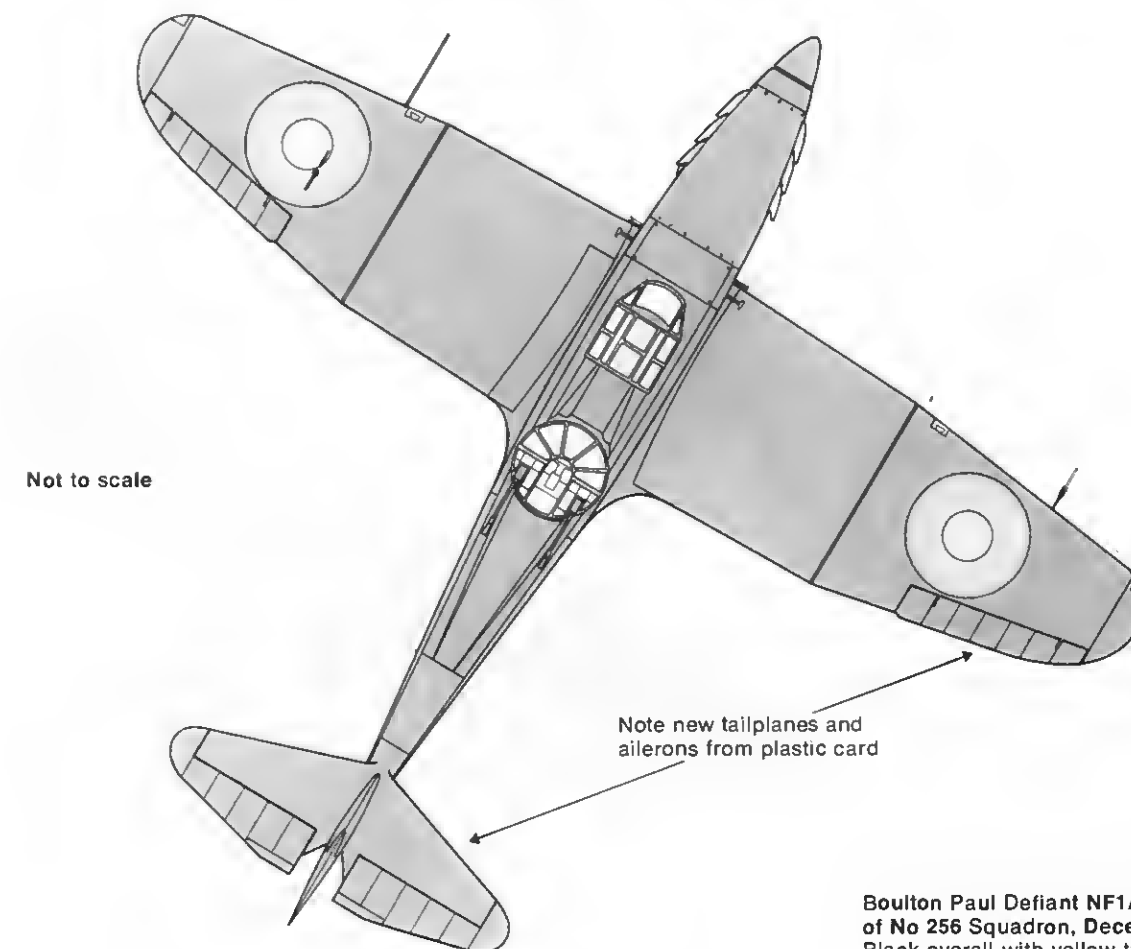
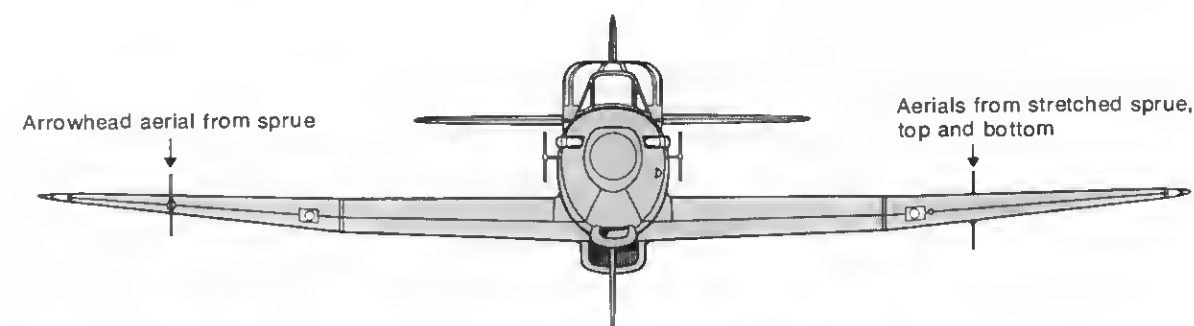
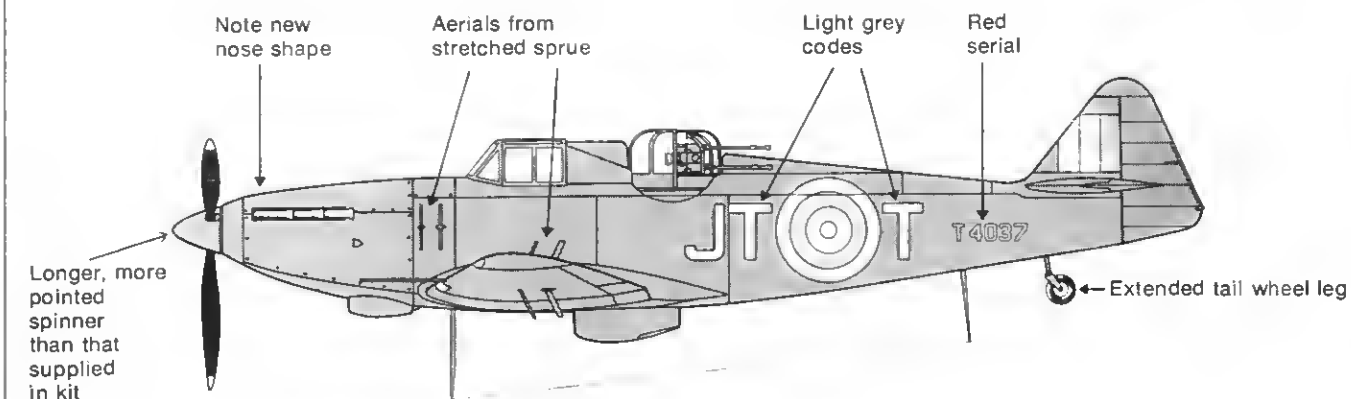
A total of 87 Defiants were ordered in March 1937, these were to be powered by the Merlin 3 and the first of them flew on July 30 1939, being handed over to the AAEE in September the same year. By the end of 1939 over half of the initial batch had been constructed but by this time a further 363 has been ordered. One of the major problems associated with the first Defiants was caused by the Merlin 3 not having sufficient power. The wing area of 250 sq ft and the weight of 8,350 lb produced a wing loading of 30 lb per square foot and the 1,030 hp of the engine proved far from adequate. The technique required to fly the aircraft under simulated combat conditions resulted in the need for considerable concentration if the pilot was to stay out of trouble by confining his manoeuvres to those where a reduction in power would not cause too much embarrassment to him and his gunner.

In December 1939 Defiants started to arrive at Martlesham to replace the Fairey Battles then being flown by No 264 (Madras Presidency) Squadron who had recently moved from Sutton Bridge. Trouble with engine failure and hydraulic systems led to a temporary grounding of the aircraft in January 1940, but this was lifted in February and the squadron was able to continue its working-up programme.

Dive bombing trials were carried out at Orfordness to test the aircraft's suitability for the ground attack role, but on February 15 1940 the Defiant embarked on a series of night flying tests that were eventually to lead to its successful role as a night fighter. No 2 Squadron became the second RAF unit to receive the Defiant but its intended use in army co-operation duties never materialised and the aircraft were withdrawn in August 1940.

One of the big problems encountered by pilots who flew the Defiant was the need to constantly think of his gunner's arc of fire, which was entirely opposite to the fighter pilot's philosophy of placing his aircraft with its forward-firing guns, behind his quarry. Despite initial operational success over Dunkirk, which led to a mistaken appraisal of the Defiant's ability, the aircraft was a complete failure as a day fighter and suffered very heavy losses in the Battle of Britain which led to its early withdrawal. The addition of AI radar plus the know-

Top of page Defiant I JT-T4037 seen before her AI VI radar was fitted, one of the illustrations from Bill Gunston's new book *Night Fighters: A Development and combat history* (PSL, £4.50) (Christopher F. Foss). **Below** Author's model of the same aircraft as described here

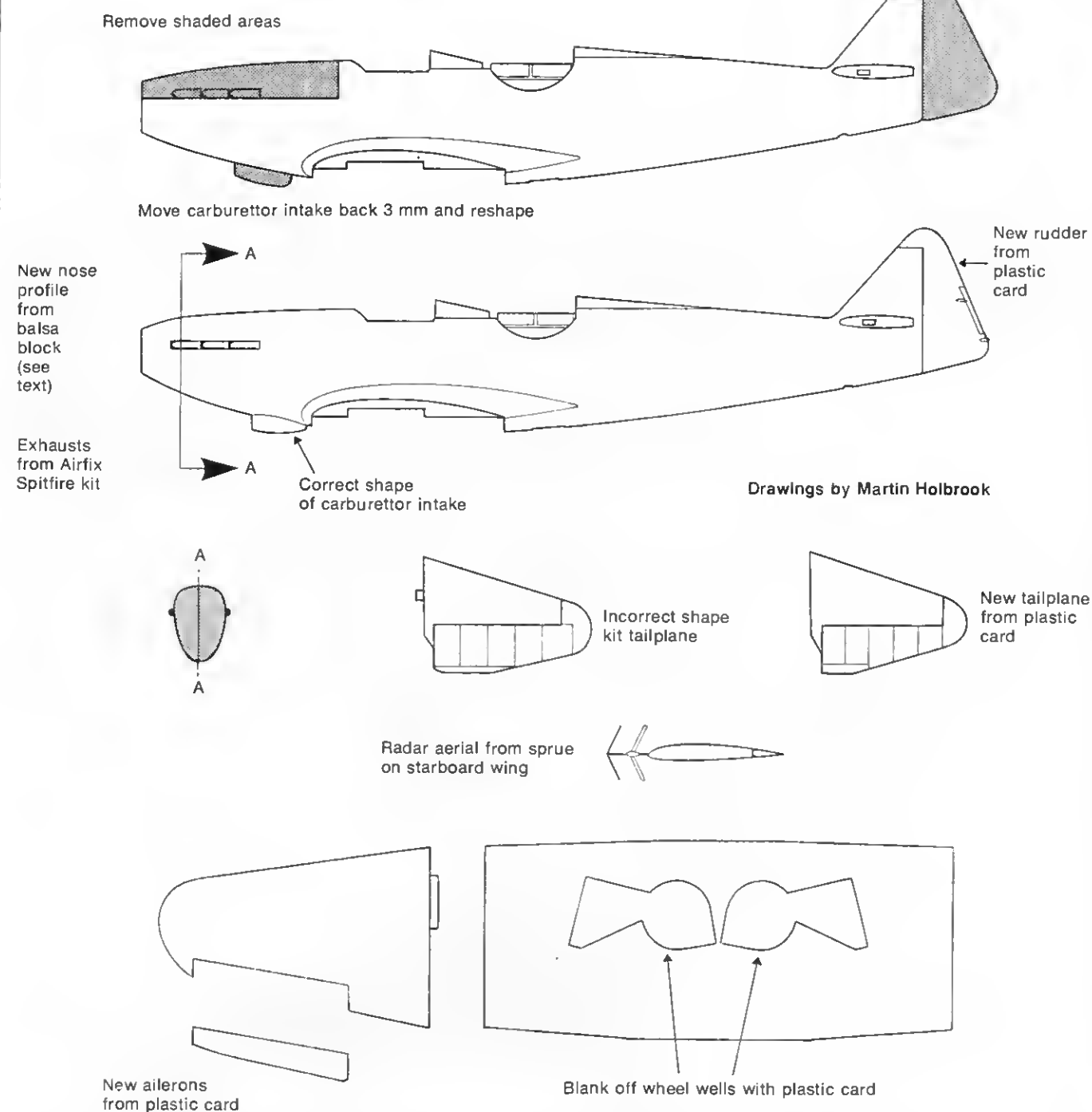


Not to scale

Boulton Paul Defiant NF1A of No 256 Squadron, December 1940
Black overall with yellow tips to propeller blades

Defiant NF1

1:72 scale



ledge that the aircraft could operate safely at night, turned it into a first class (first generation) night fighter and it achieved the highest number of kills per sortie of any night fighter during 1940-41. When more modern aircraft took over the night fighting role in 1942 the Defiant was used in a variety of other roles ranging from search and rescue, or gunnery training to convoy patrol duty and target towing.

Although not achieving the success hoped for in its original conception, the Defiant still earned a niche in aviation history for one example, DR 944, was used by Martin-Baker to carry out initial trials of their now famous ejector seat. On May 11 1945 the first successful dummy ejection was carried out from this aircraft and six

days later further trials at speeds up to 300 mph were undertaken. So in the twilight of its career the Defiant made a not insignificant contribution to aviation history.

The type was declared obsolete in July 1945 although it continued to be seen in service with various met flights and Station Flights after this. A total of 1,064 Defiants was delivered to the RAF and it equipped 30 squadrons in the fighter, night fighter, air-sea rescue, target towing, army co-operation and special duty roles.

The Airfix kit of the Defiant, like the Camel, is one of the company's early offerings and shows its age, both in the quality of the moulding and accuracy. The kit has been severely criticised in respect of the latter but it is not, in fact, as bad as it has

been painted.

The most significant error seems to be in the nose area where the shape is totally incorrect and fails to capture the characteristic line of the Merlin cowlings, so it is in this area that this conversion starts.

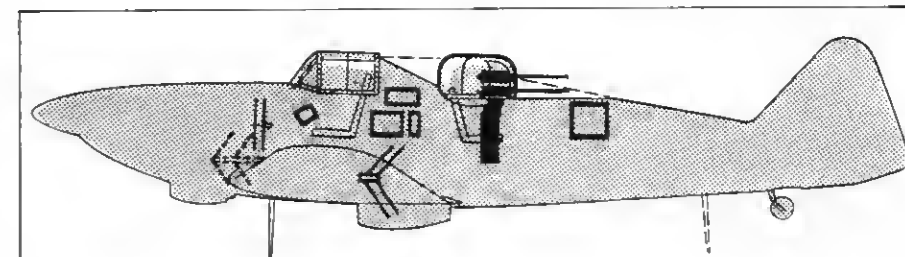
Before cementing the two fuselage halves together cut off the rudder, carburettor intake under the nose, and a section following a line below the exhausts to just forward of the windscreen. Clean up the cuts, insert a cockpit floor and the turret assembly as well as a small piece of plastic card to fill the stand slot, then cement the fuselage halves together.

A block of balsa is now cemented to the front fuselage and when this has set is carved to achieve the more rounded nose

and flattened top associated with the Defiant's top cowlings. The rudder, which is moulded to the kit fuselage halves, is incorrect in shape, being too pointed at its base; this was removed during the first stage and is now replaced with a new one made from 30 thou plastic card sanded to the correct cross-section and with the ribbing simulated with stretched sprue as was done for the Camel.

The carburettor intake on the kit, which was also removed, is in the wrong position and is the wrong shape; a new one is carved from laminations of plastic card and cemented to the nose as shown on the drawings. Exhaust pipes on my model came from an Airfix Spitfire Vb with the fishtails modified but those from a Hurricane or scratch-built from plastic card will do just as well. The Spitfire kit also provided the spinner which is much more pointed and of greater diameter at its rear end than the assembly included in the original Defiant kit. The propeller blades were cut from plastic card and inserted into the cut-outs on the Spitfire spinner. Before leaving the fuselage, fill the hole under the centre section with a piece of 10 thou plastic card otherwise it will be possible to look right down through the cockpit and see daylight via the wheel wells. Apart from the ailerons the wings are accurate in shape and only need cleaning up around the trailing edges, the insertion of landing lights and walls to the wheel wells to make them acceptable. New ailerons are made from 30 thou plastic card and once again the ribbing is simulated with stretched sprue held in place with liquid cement.

Although correct in span the tailplanes do not have the right shape along the elevator hinge line or their trailing edges, so it is best to replace these completely or remove the elevators and fix new ones from



Diagrammatic representation showing the armament and AI VI radar installation in a Defiant 1A drawn by Art Bowbeer, one of the many such illustrations in Bill Gunston's new book on Night Fighters.

plastic card to the tailplane sections. Of the two methods the one I used was to completely replace the kit parts with plastic card components made from laminated 30 thou sanded to aerofoil section. I made these in two separate parts, the tailplanes forming one set of components and the elevators the others. Needless to say the elevator ribbing was produced in the same way as it was for the rudder and ailerons. The undercarriage doors in the kit were used as patterns for thinner ones made from 20 thou plastic card and the oleo legs were cleaned up before being cemented into their locations.

Final attention to the undercarriage assembly is the provision of larger diameter wheels to replace those in the kit which are also far too thin. The wheels I used came from my spares box and are 9 mm in diameter and just over 3 mm thick. The tail wheel oleo is also a trifle too short and I replaced this with a longer one cut from Slater's rod to which I attached the original kit tail wheel.

The twin arrowhead radar aerial on the starboard wing, and the two H ailerons just below the windscreen and to the rear of the

exhausts, were made from stretched sprue and cemented into position, while the two blade ailerons above and below the port wing were cut from 10 thou plastic card and cemented into position after the roundel was placed. The model was painted matt black and markings for a machine of No 256 Squadron, as supplied in the kit, were used.

The fairing behind the turret retracted into the fuselage top decking to enable the guns to be traversed and it is not too difficult to make the aircraft in this condition by removing the moulded fairing from the kit fuselage and replacing it in the lowered position. This certainly changes the outline of the Defiant and the keen night fighter modeller might well be tempted to make two models; one showing the aircraft in its 'clean' state and the other with the decking retracted. Whichever is chosen, if care is taken, a good model of the night fighter that bore the brunt of the early Luftwaffe night bombing offensive will result.

The RAF also used the Hurricane in the night fighter role and it achieved some success when operating in conjunction with searchlights and on clear nights, as all interceptions had to rely on the pilot's vision since radar was not carried. The Hurricane was used in an interesting experiment with an airborne searchlight carried in a modified Havoc. A pair of the single seat fighters operated in close co-operation with the radar-equipped searchlight aircraft, and this is one of the conversions that will be covered in the next part of this series.

Messerschmitt Me 109G-6

On the other side of the North Sea the Germans were faced with similar problems as far as night interception was concerned and they too pressed into service aircraft that had been designed for the day fighter role.

To combat the increasing activity of RAF Bomber Command, the Luftwaffe was forced to take a very serious look at the provision of an effective night fighter force. This had been somewhat neglected in the early days of World War 2 as the thought that Bomber Command could carry out effective raids over the German homeland, had not been given serious consideration in the quarters that mattered. As the threat developed the pattern of night fighting followed similar lines to those experienced by the RAF. The Bf 110 was developed into a most deadly night fighter and shared its vital role with various sub-types of the ubiquitous Ju 88 as well as other types specifically designed as night fighters. But in the early days, and indeed later in the war, the

Another view of the author's Defiant model.





famous Bf 109 and Fw 190 helped to harry the British night bomber force. The Luftwaffe night fighter force fought as stubbornly as the RAF had in the Battle of Britain to defend its homeland, and as airborne radar was developed, it began to have a telling effect. However, as suitable countermeasures were evolved both sides became engaged in a see-saw struggle, the outcome of which is now well known. But one counter measure tried by the Germans featured the Bf 109G equipped with a form of airborne interception radar.

Major Hajo Hermann proposed the use of single-seat fighters over the target area where it was expected that enemy bombers would be silhouetted against the sky by searchlights, target markers and fires. These aircraft roamed freely about the sky hunting targets as and when the opportunity arose. These tactics, which were successfully used by Jg 300, were known as 'Wilde Sau' which translated means Wild Boar, and they led to the formation of a complete division devoted solely to their use.

Initially only one Gruppe in every Geschwader had its own aircraft, the others using day fighters belonging to the Gruppen whose airfields they shared. Eventually it became necessary to fit homing aids to

the fighters and this inevitably led to the introduction of interception radar. The Me 109G-6N was designed with Wilde Sau tactics in mind, and in addition to exhaust dampers and anti-glare shields, it was fitted with Naxos Z radar designed to pick up emissions from the H2S sets installed in RAF bombers. The Naxos Z rotating aerial was housed in a clear dome behind the cockpit and a DF loop was installed below the belly. Armament was one MK 108 cannon firing through the spinner, two engine-mounted MG 131 and two MG 151/20 in underwing gondolas. As it turned out only a handful of this version of the 109 were produced and used by Jg 300 for a very short period.

The standard Airfix kit can easily be converted to this version by adding the parts shown on the drawing which is a Me 109G-6U4-N of Jg 300. The parts needed can be adapted from components which any serious 'converter's' spares box should by now contain. Similarly the Me 109G-14 flown by Major Friedrich Müller, the Gruppenkommandeur of 11/NJg11, can also be modelled to give two versions of single-seat German night fighters.

This aircraft, which carries thirty confirmed kill markings in three rows of ten white bars each with a diagonal black

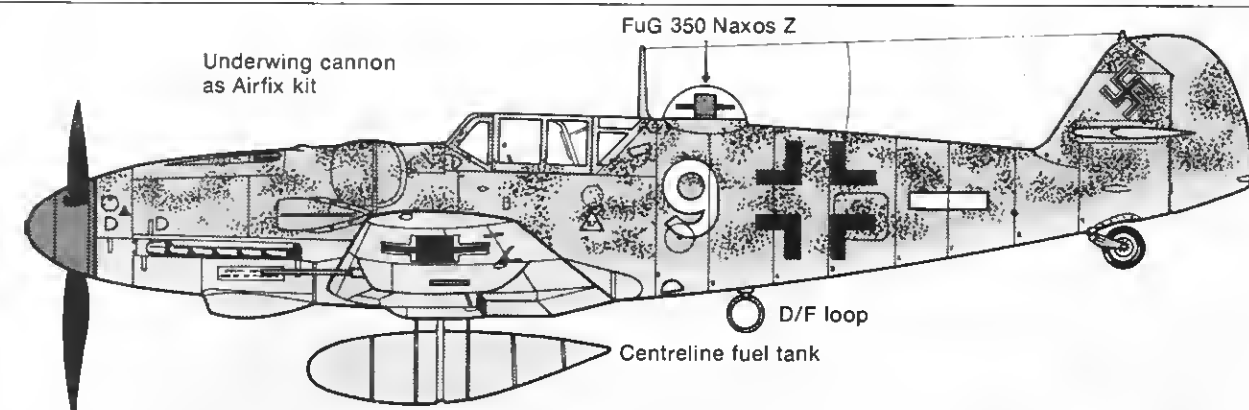
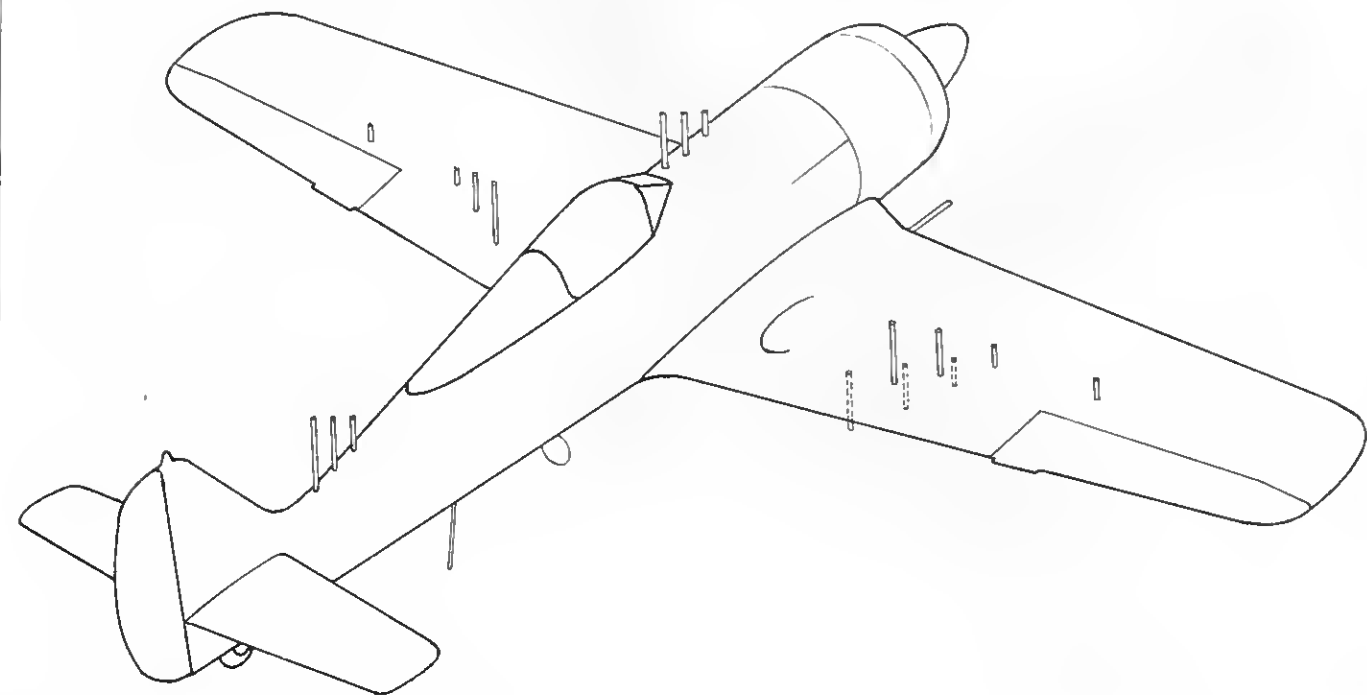
stripe across them and a RAF roundel at their apex, carried a MG 151/20 cannon mounted at an angle of 70° behind the cockpit. This installation, which is more familiar on Bf 110 and Ju 88 night fighters, was known as 'Schräge Musik', which is loosely translated as Jazz Music. The real meaning, however, is oblique music and is derived from the early days of jazz when this type of music was often called oblique (Schräge). Since the weapon was installed at an oblique angle it is not difficult to see how the name arose.

On the conversion the obliquely mounted MG 151/20 is made from stretched sprue and mounted at an angle of 70°, 12 mm to the rear of the canopy on the centre line. The Fw 190 was also used on Wilde Sau interceptions but as the present Airfix kit of this aircraft depicts a D version, conversion is not possible, as the aircraft used were Fw 190A series. However, for those who wish to include one of these aircraft in their night fighter inventories a drawing of an Fw 190A-9/R11 showing the positions of its aerals is included. Another proposed version of the Fw 190 was fitted with 3 x 30 cannons mounted behind the cockpit and firing upwards at an angle of 70° as in the Me 109. On the Fw 190 they were not mounted on the centre line and appeared from the top shoulder of the fuselage, they each carried a single shell and were fired by a photo-electric cell which was activated when the shadow of the bomber being tracked passed across it.

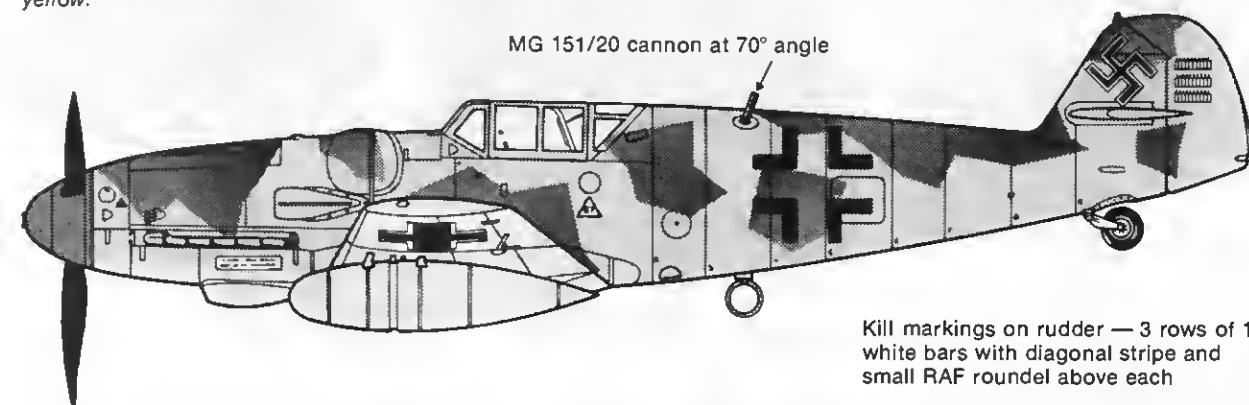
The next part of this series of conversions will cover some of the twin-engined night fighters used by the RAF and Luftwaffe and will show how truly effective aircraft were produced from successful and not so successful day fighters.

I should like to acknowledge the help of Harry Woodman who kindly supplied information about the night fighting Camel.

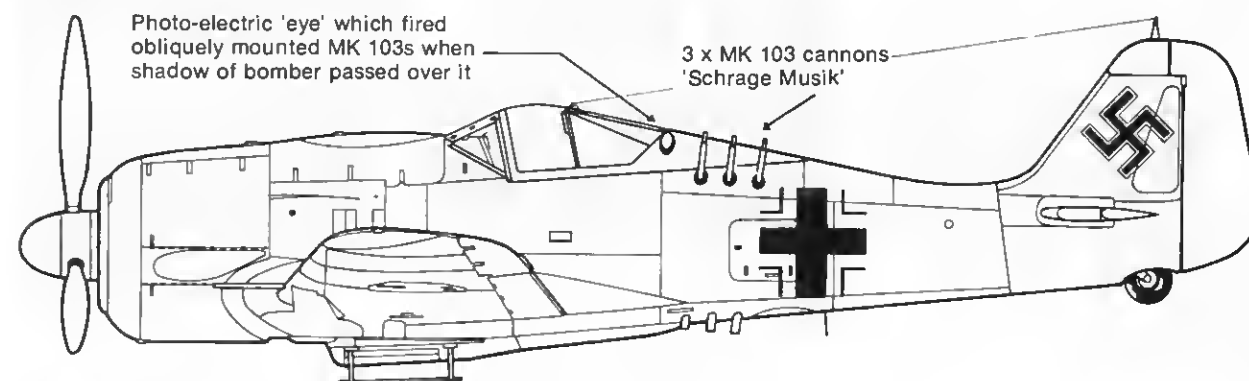
Fw 190A-9/R11 showing approximate positions of FuG 217 aerals (not to scale).



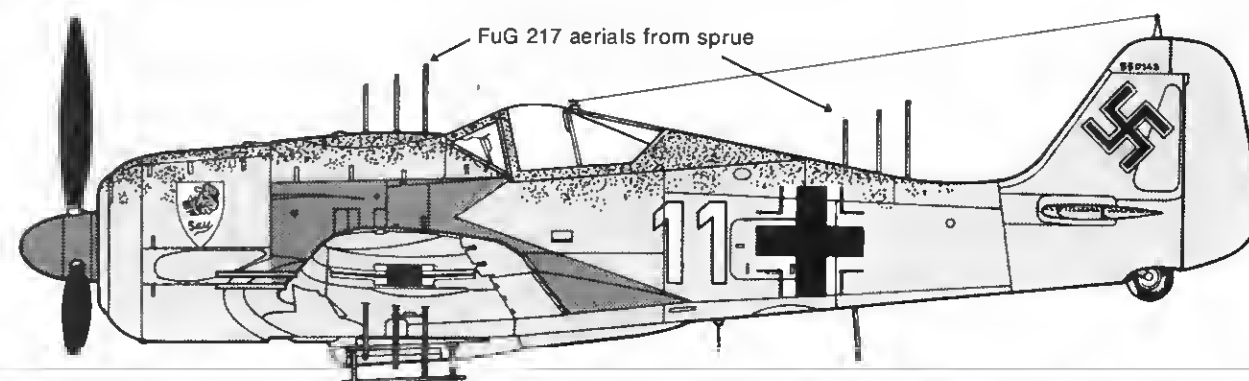
Bf 109G-6/U4 of 6/JG 300. Under sides light blue 65; grey 74/76 mottle on fuselage; grey 76/green 75 splinter on wings. Fuselage crosses grey, as are upper wing crosses. Underwing crosses and swastikas black. Codes and Gruppe symbol yellow.



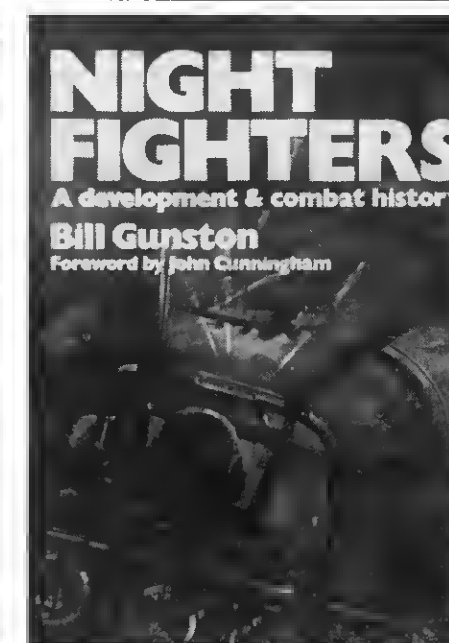
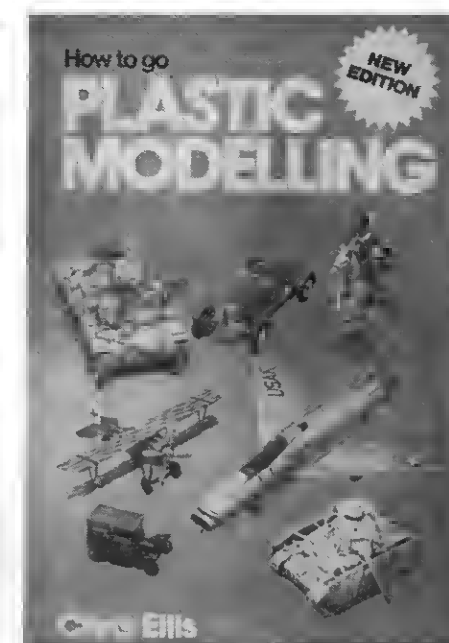
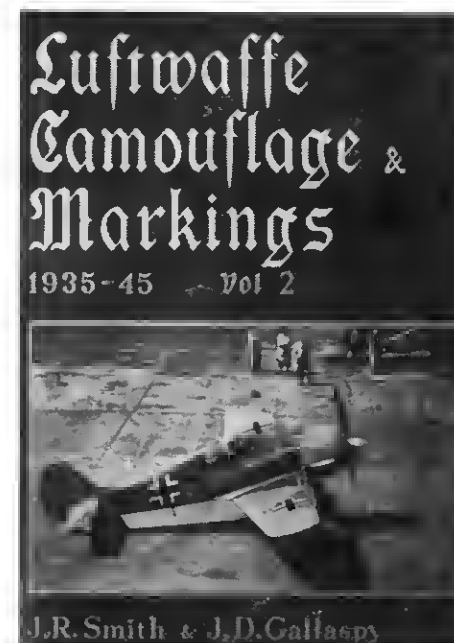
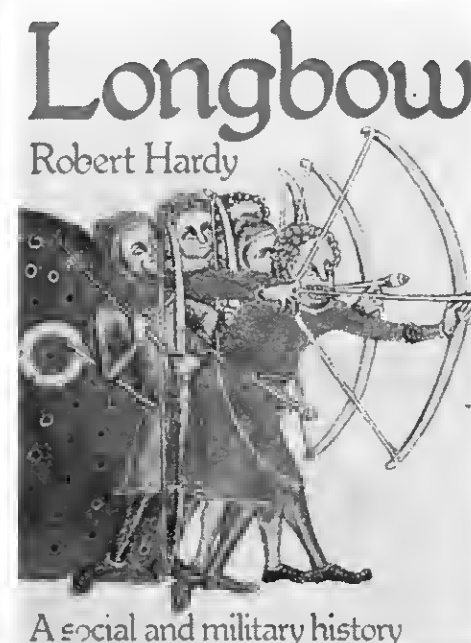
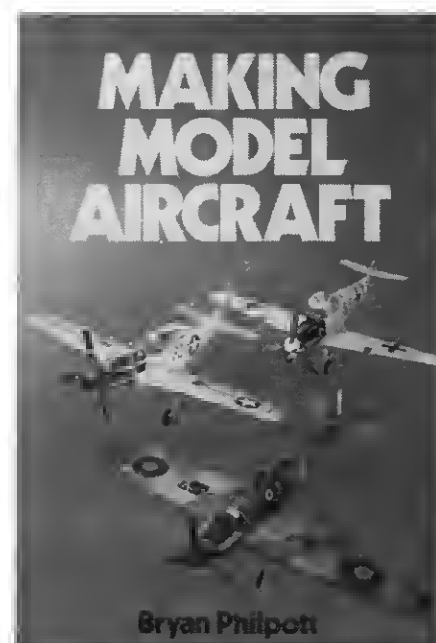
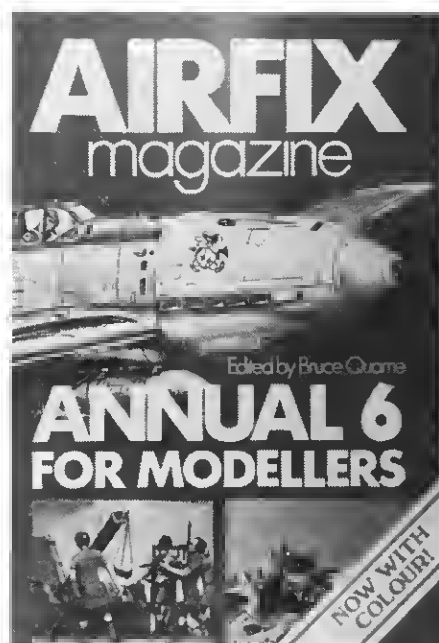
Bf 109G-14 (Major Friedrich Müller). Light blue under sides did not extend on fuselage sides. Fuselage mottle had sharp edges and was green 75 with dark green 71 mottle. Splinter on wings dark green 71/black green 70.



Fw 190A-8/R6, one version of the Fw 190 used on 'Wilde Sau' operations.



Fw 190A-9/R11 of 1/NJGr10. This is a typical example of a single-seat fighter modified for 'Wilde Sau' operations. (All drawings by Martin Holbrook.)



THIS YEAR'S selection of autumn books for modellers; military, aviation and naval enthusiasts; and wargamers, is the best yet from Patrick Stephens Limited.

Heading the bill is, of course, the ever popular **Airfix Magazine Annual***, now in its sixth successful year of publication. The latest edition is even bigger and better than before, with four full-colour features and eight extra pages. The contents includes articles, all lavishly illustrated with photos and drawings, on: modelling the Highball Mosquito and MiG 15 variants; V-bombers; the RAF's attempts to sink the *Tirpitz*; South African Mirages; Luftwaffe fighter heraldry; German Steyr 640 trucks and Sdkfz 223 light radio car; motorised infantry in the desert; a Roman onager and balista, with crews; HMS *Campbeltown* at St Nazaire; Matilda CDL and crane tanks; a model paddle steamer tug, Ford Model T van, French Foreign Legion fort and much more. *Price £2.50 (£2.74 by post direct from the publishers).*

Then, the book which all aircraft modellers have been waiting for: Bryan Philpott's **Making Model Aircraft***. This is a complete guide to making model aircraft in all the popular scales, from 1:144 to 1:32, and includes hints and tips on a wide variety of subjects, including metal-skipping, home vac-forming, heat moulding, wood carving and scratch-building. There are also several practical modelling projects, with plans and photos, ranging from a diminutive Miles M20 to an enormous Merlin-engined Beaufighter. *Price is £3.95 (£4.42 by post).*

A completely different note is sounded in actor Robert Hardy's first book, **Longbow: A social and military history**, which includes not only a

Six of the best

complete description of the longbow's evolution throughout the world, but also its use in archery, war and hunting. This lavishly illustrated book, which includes eight pages of colour, also explains how to build your own bow. The meticulously researched technical appendices and battle accounts will be of particular value to ancient and medieval wargamers. *Price of this magnificent book is £7.50 (£8.10 by post).*

Serious students of German wartime aircraft, and many modellers, will already be familiar with volume one of Kookaburra's highly acclaimed **Luftwaffe Camouflage and Markings**. Volume two, which takes the story from the Battle of Britain to 1943, is now available, and is to the same very high standard. It includes hundreds of black and white photos and no fewer than 78 full colour photos and drawings, giving the most complete picture ever published of Luftwaffe colour schemes on all fronts during this period. *Price is £8.50 (£9.20 by post).*

Not a new book, but extensively revised and updated, is Chris Ellis's ever-popular **How To Go Plastic Modelling***, now in its fourth edition with a full-colour cover. This book has been widely hailed as the plastic modeller's

'bible', and includes all the information you need to make accurate and well-finished models of aircraft, ships, AFVs, cars and figures. This new edition has been thoroughly revised to take account of changes in the modelling market over the last three years, and includes one new aircraft conversion project. *Price is £3.95 (£4.19 by post).*

For aircraft historians and enthusiasts, Bill Gunston's new book **Night Fighters: A development and combat history**, will prove a 'must'. The first detailed account of a complex and neglected subject, it traces the development of night fighter aircraft, tactics, weapons and equipment from the earliest days when intrepid 'birdmen' took their stick and string biplanes into the night sky during World War 1, right up to today's sophisticated multi-role combat aircraft, such as the Foxbat and Tomcat. The main emphasis of the book is, however, on World War 2, and describes developments in Britain, America, Germany and Japan. The story of airborne interception (AI) radar and of aircraft, such as the famous Mosquito, Ju 88, and Black Widow to carry it, is well told, and there are thrilling accounts of night fighting

which really put the reader 'into the cockpit' as well as giving him the technical knowledge to understand the complexities of aerial combat in the dark. A photo section and numerous plans and diagrams complete this invaluable book. *Price is £4.50 (£5.00 by post).*

Not illustrated, but also new this autumn, are the following books.

British Vessels Lost at Sea 1939-1945* is a facsimile reprint of two Admiralty handbooks published by HMSO just after the end of the war, and gives information on the class, name, tonnage, date of completion, date of loss and how lost and where of both naval and merchant vessels. This reprint of two rare collectors' items will be welcomed by naval historians and shipping enthusiasts everywhere. *Price is £3.95 (£4.42 by post).*

Another reprint of famous books for aircraft and naval enthusiasts is **Ships and Aircraft of the US Fleet**, a slip-cased four-volume set containing James Fahey's much sought-after 1939, 1941, 1942 War and 1945 Victory editions, which describe all the ships, from mighty battleships and carriers down to small Fleet auxiliaries, and all the aircraft types in use throughout the war. This gives a fascinating picture of the development of American maritime power and will be invaluable for all military historians. *Price of the set is £8.35 (£8.90 by post).*

Two further reprints of sought-after titles which will be of interest to the growing ranks of airship enthusiasts are **The Hindenburg Accident**, a detailed account, first published in 1938, of the causes of the Hindenburg disaster at Lakehurst the previous year; and **Why Has America No Rigid Airships?**, a reprint of a rare book, first published in 1945, which raises

the question: why doesn't America use the dirigible, the aeroplane and the steamship to provide the country with the best possible transportation system? In the light of recent airship developments this interesting book has renewed relevance today. *Price of The Hindenburg Accident is £4.60 (£4.92 by post); of Why Has America No Rigid Airships? £4.60 (£4.92 by*

post).

Finally, don't forget the two latest **Airfix Magazine Guides** which were published in September, No 17: **British Tanks of World War 2**, by Terry Gander and Peter Chamberlain; and No 18: **USAAF Camouflage of World War 2**, by Jerry Scutts. Both represent superb value for money at £1.40 each (£1.61 by post).

The following stockists, and other leading book and model shops, carry a good and varied selection of PSL and Airfix books.

Belfast The Model Shop, Queen Street;
Bradford Train Shop Supermarket, Bertram Road;
Bristol The Modellers Den, Fairfax Street, Broadmead;
Cambridge Ren Models, 63 Fitzroy Street;
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Pioneer, German Sturmabbattalion

54 mm Airfix figure conversion from
Martin Windrow and Gerry Embleton

THE GERMAN Army on the Western Front of 1914-18 began forming special 'Assault Companies' at about the time of Verdun. Picked from among the best men available, they were aggressive little units whose main tasks were trench-raiding and special spearhead duties during general attacks and counter-attacks. At first each division organised its own company, but as the war progressed the system became more official and consistent; and by the Armistice there were 19 'Assault Battalions'. Usually these comprised four pioneer companies, light mortar and flamethrower detachments, and a machine-gun section. The company usually had one officer and about 120 men. Uniforms were as varied as those worn by the rest of the German Army, and included 1910 field service dress, the 1915 *bluse*, and the various hybrids which fell between, with the branch distinctions of infantry, jägers, cavalry, and all the technical branches of service. Equipment was cut down to a minimum, for lightness and agility, and a number of improvised

Three views of painted model, showing detail of equipment and insignia. A party of these figures could be modelled, basically similar but variously armed with pistols, trench clubs, knives, short cavalry carbines, or large numbers of grenades hooked to belt and equipment.



and no chest pockets. There are several usable torsos in the spares box, including an Airfix Rifleman which could have been sawn off at the waist and converted with some ease by the removal of collar and buttons; but in the end we used a very plain Historex torso in a stable-vest. We carved away all detail; scribed a new fly-front with the point of a knife; and stuck it to the waist of our Afrika Korps pelvis. When it has set hard we carried out final filing and trimming and covered the joint with a plastic card belt with a rectangular buckle. The head was added next, after sawing off the neck at the right height and angle to unite with the Historex moulding. When it was set firm we added the falling collar from plastic card.

Arms can be selected to taste; the only essentials are deep, plain turned-back cuffs. These can be simulated either by filing a groove round a full sleeve at mid-forearm, or by sticking actual cuffs of thin plastic card to filed-down sleeves. Hands can be positioned to suit your personal choice of animation, of course. Our selection of a pose suggesting the thought, 'Donner und Blitzen, not rain again!' is not frivolous; the weather could play a decisive part in the science of trench-raiding across No Man's Land at night.

We cemented the helmet firmly on the head and let it set before working on it. First we filed gently at the vertical face of the front of the skull above the peak, using a round-section rat-tail file passed lightly and carefully across the top of the peak where it swung upwards at the back. Check constantly by holding the helmet in profile. The idea is to make the front of the skull more sharply vertical, thus making the peak seem relatively longer. It can be done quite easily, but the trick is to stop before (a) you go through the front surface of the



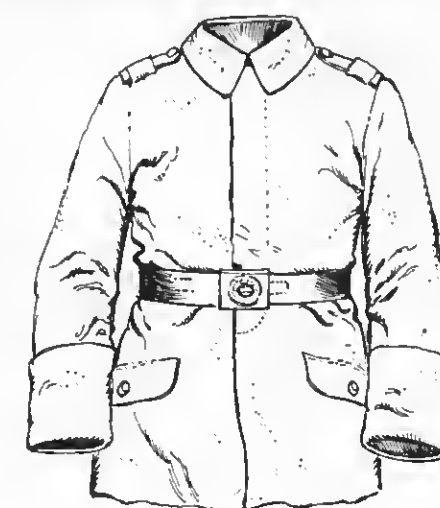
helmet by over-enthusiastic filing, or (b) you make a groove across the bottom of the front face with your rat-tail, too deep for subsequent filing with a half-round blade to remove, thus giving your vertical front face an 'undercut' appearance. (This seems a lot of words to describe a very simple operation, but the English language has its limitations!) When filing is completed to your satisfaction, take two tiny rounded stubs of plastic, perhaps cut from stretched sprue, or from an old gun-barrel or aerial-mast in the spares box, and stick them like little horns to the side of the helmet near the front. They should be one third of the way down the total vertical height of the helmet from dome to rim, and in line with the 'step' of the rim. A chin-strap can now be added from card.

There only remains the equipment. Layouts tended to be individual, but we have chosen typical features from photographs. We put one set of ammunition pouches (three) from the Afrika Korps on the right front of the belt, and the Luger holster butt forwards on the left front. On left and right

German infantry officer and men wearing the red-piped 1910 tunic, which in original or simplified form was to be seen throughout the war (IWM).

hips were stuck stick-grenades, handles down, as if hooked to the belt by flat hooks welded to the heads. A trench-knife was made from a Mauser bayonet and its scabbard (as were many of the real items) and stuck to the belt between holster and grenade. Bread-bag and canteen went on the rear right side. The mess-tin was cemented to the middle of the back, and round it we cemented a horseshoe roll of tightly-rolled tissue to represent a greatcoat or blanket (see photos). This was bound with plastic card straps at the top centre, high on each side, and the bottom where the ends met. A long plastic card carrying strap was added. This started from behind the bound ends at the bottom; passed round to the front of the body, upwards round the shoulder; back over the shoulder to loop through the

Simplified 1915 pattern Bluse as worn by the raider NCO in our model.



top centre binding-strap; forwards over the top of the other shoulder, down the front and back under the armpit; and finally united once more behind the bottom binding-strap of the roll. Finally, we put a pair of binoculars into his hand.

The reference we suggest is Almark's *German Infantry 1914-18* by David Nash. It is quite simple to paint our stormtrooper without formal reference, however. The helmet can be plain field grey with mud-splashes, or — far more attractive — the splinter camouflage scheme we used on our model in dark green, dark grey, ochre, dull red, black, and white. Black lines often divided the segments. The *bluse* should be field grey, as should the trousers, though the latter were often a greyer shade with less green in the tone than the tunic. Leather elbow and knee-patches would be typical of the assault units. Puttees can be any shade of grey, green, or fawn you like. All leather equipment was blackened; belt plates were dull metallic grey. Mess-tin and grenade heads can be metallic grey-green, chipped and battered in places so that they show silver flecks. Canteens were covered with fawn or grey cloth; the cup strapped over the neck can be the same shade as the mess-tin or dull silver. The grenades have natural wood handles. The horseshoe roll on the back, after treatment with a thin coat of 'soup' to destroy its 'hairiness', can be painted almost any shade of grey or green, to contrast with the uniform.

It is highly unlikely that the raiders would wear identifying epaulettes when in action, but for the sake of the look of the model we compromised. The shoulder-straps from the 95th Rifles kit, trimmed down and stuck to the shoulders over the carrying strap of the roll, were painted black with red piped edges, the Pioneer colour code. We also gave our NCO little L-shapes of dull silver-grey lace in the corners of his collar — the reduced form of rank insignia in use at this time; and a black and white Iron Cross ribbon in the front closure of his *bluse*.

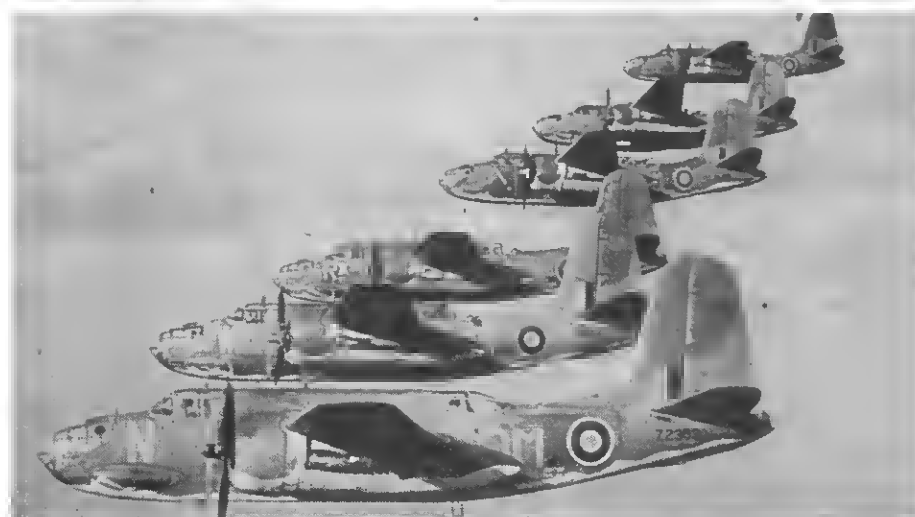
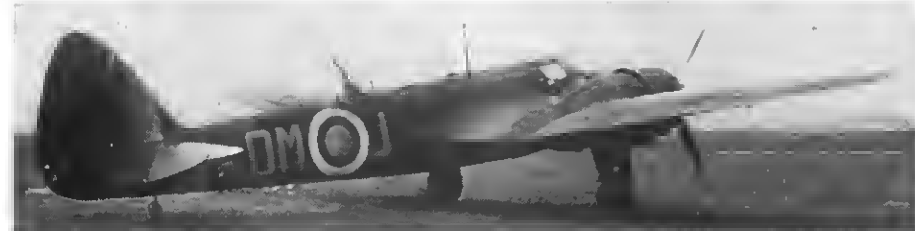
Many variations of this basic figure can be made up, with different types of jacket and legwear and different weapons and equipment. As well as the David Nash book quoted, we suggest another useful Almark title, *The Western Front 1914-18* by Gerry Embleton and D. Banting; among the illustrations is a painting of a stormtrooper wearing the 'water-wing' grenade satchels typical of the period.



Squadron codes

and colours 1939-56

By Michael J. F. Bowyer and John D. Rawlings



ON No 56 Squadron (c)
Reformed by renumbering No 124 Squadron in April 1946, No 56 Squadron kept the code letters 'ON' on its aircraft until 1947 when it reverted to its wartime code of 'US'. One of its Meteor F 3s was ON:N-EE365.

OO No 13 Squadron (c)
No 13 Squadron served in France in 1939-40 with Westland Lysanders, wearing 'OO', and continued to use this combination on its return until going to North Africa in November 1942. The Lysanders had by then been replaced by Blenheim IVs and Vs. Examples are Lysander II OO:Z-L4767; Lysander IIIA OO:D-V9288; Blenheim IV OO:B-V5467.

OO No 1663 HCU (c)
After 13 Squadron's departure overseas the letters 'OO' were reallocated to this HCU which, at Rufforth, trained Halifax crews for the 4 Group squadrons. Examples are Halifax II Series IA OO:R-HR873; Halifax III OO:K-LW793.

OP No 11 OTU (c)
One of Bomber Command's early OTUs, No 11 was equipped with Wellingtons from start to finish, and used 'OP' as one of its codes. Bases included Bassingbourn, Westcott and Oakley. Examples are Wellington I OP:R-L4227; Wellington IC OP:J-N2750; Wellington X OP:K-LP978.

OQ No 5 Squadron (c)
No 5 Squadron served in the Far East throughout World War 2 and after and 'OO' was its allotted combination. The only known use of this code by 5 Squadron is on its Hart (India) aircraft at the beginning of the war, eg OO:P-K2129, and on its Tempest F 2s just after the war, eg OQ:R-PR559.

OQ No 52 OTU/Fighter Leaders School (c)

Catching up on some of the photos which should really have appeared with last month's instalment: Top left A 149 Squadron Stirling I, OJ:N-W7491, airborne in 1941; Above left R5852, one of 83 Squadron's early Lancasters, flew with the squadron until crashing in September 1942; Left This 107 Squadron Blenheim IV has the white of its roundels and fin stripes painted out for night bombing (IWM). Below left Boston III of 107 Squadron in 1942. OM:N is Z2303, OM:W is Z2164. Below Spitfire HF IXs of 124 Squadron in June 1945. ON:B is PV303 (B. R. Murray via M. Garbutt).

This combination was used by both the above units at Aston Down on Spitfires. The OTU was closed down on August 10 1943 and the Fighter Leaders School took its place. Examples are Spitfire VB OO:S-BM376 (52 OTU); Spitfire IX OO:O-BS347 (believed FLS).

OQ No 172 Squadron
This combination was also carried by No 172 Squadron at Chivenor and Limavady in 1944-45 on its Coastal Command Wellingtons, eg Wellington XIV OO:E-NC612.

OR
Used on the B-17s of the 323rd Squadron of the 91st Bomb Group, USAAF, from Bassingbourn from October 1942 to June 1945.

OR Bomb Ballistics Development Unit (c)
Allocated to this unit, stationed at Martlesham Heath, circa 1945, and is known to have been carried on Lancaster PB619.

OR
An unconfirmed report has quoted a Vampire FB 5, WA187, as carrying the codes 'OR:S', but no knowledge of this unit has come to light.

OS No 279 Squadron
This code combination, carried on air-sea rescue Hudsons, is believed to have been used by No 279 Squadron from Bircham Newton in 1943-44, eg Hudson ASR III OS:T-V9158. Confirmation would be welcome.

OS Station Flight, Sturgate (c)
Allocation confirmed, no report of its use.

OS
Used by the P-47s and P-51s of the 357th Squadron of the 355th Fighter Group from Steeple Morden from July 1943 to July 1945.

OT Bomber Development Unit
This unit, formed from the Bomber Development Flight at Feltwell in 1943, is believed to have carried the codes 'OT'. Wellington X LN318 was coded 'OT:A'.

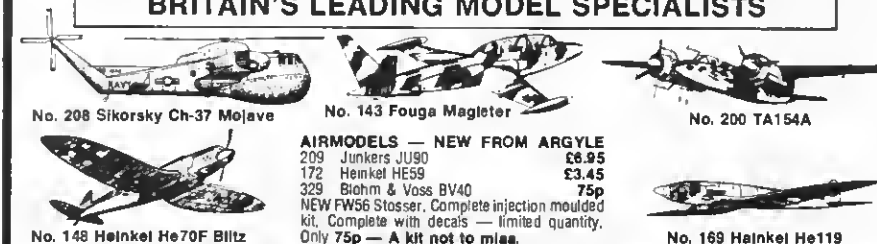
OT No 58 Squadron (c)
In August 1947 No 58 Squadron was reformed at Benson in the photo-recce role, equipped with Ansons and Mosquitoes. It carried the letters 'OT' until codes were dropped from operational aircraft in April 1951. Examples are Anson C 19 OT:P-VL357; Mosquito T 3 OT:Z-VT589; Mosquito PR 16 OT:Y-PF668; Mosquito PR 34 OT:R-RG178.



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World War 2 armoured trains

Final instalment in this modelling series from Terry Wise

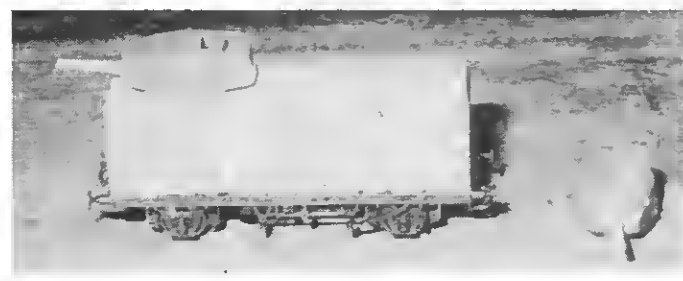
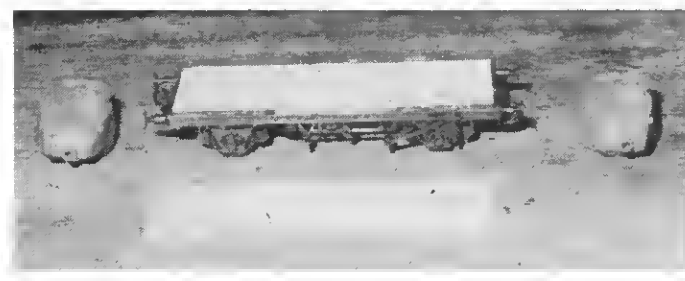
BY 1902 MOST major European powers had realised the potential of armoured trains and railway guns but the emphasis was on the latter and when World War 1 broke out there appear to have been few custom-built armoured trains available — except in Britain, where such trains had been built as part of the coastal defences and were therefore destined never to fire a shot in anger. One such train was built at Crewe and was fully armoured, including skirts over the wheels, with slits for machine-guns and rifles in the wagon and guns mounted on the open ends of trucks, protected by gun shields and plate to waist high. This train was spearheaded by a gun and machine-gun truck, followed by a roofed rifle wagon, a Great Northern 0-6-2 engine, then a second roofed rifle wagon and a gun and machine-gun truck bringing up the rear. Another type of gun wagon, built for use on the Sussex coast, had a 40 pdr gun in an armoured turret at one end of an armoured truck, the turret having 360 degree traverse.

The Royal Navy came to the fore again in Belgium in 1914; the Nieuport-Dixmuide road, defended by the RN Brigade, being behind a railway line. The trains improvised by the Navy had six 4.7-inch guns manned by seamen gunners and backed up by Belgian riflemen. The train did noble service in the first weeks of the war, rattling up and down the tracks round Antwerp, getting off a number of rounds then retiring before the German artillery could get the range. The Belgians also introduced an armoured train into the Anvers area, the locomotive armoured at sides and front only, with closed wagons of the Boer War rifle type.

Another improvised train was used by the British to shuttle reinforcements to and from along the Suez Canal when it was threatened by the Turks in 1914-15. Ordinary closed wagons and a flat bed truck were used, the latter 'armoured' with sandbags round the edges. The engine was plated but the only armament appears to have been rifles. The train was manned (at least partially) by Indian troops.

During the course of the war Germany,

Below left Tank turret wagon: converted base from the Airfix Esso Wagon kit, tank turrets from the T-34. **Below right** The tank turret wagon built up ready for painting. Note the turrets have been up-gunned.

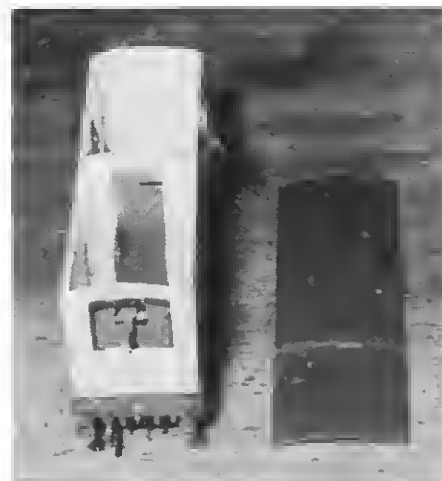


Russia and the Austro-Hungarian Empire all used custom-built armoured trains to a small extent, but the Russian Revolution in 1917, and the resulting necessity of keeping open lines of communication and maintaining control over large tracts of land in the face of White Russian infiltration, led to literally dozens of armoured trains being in operation in Russia. Some of these trains belonged to the Red Army, some to the White, some to the Green Guards (bandits belonging to neither side) and a few to private and uncontrollable armies of dubious loyalty. Most of the trains were of the light variety: a lightly armoured repair truck leading, then a machine-gun truck, the engine, a heavily armoured light field gun and machine-gun truck, an armoured truck full of infantry to disembark in support of the train when necessary, and finally a heavy gun mounted on an armoured wagon. The heavy gun usually carried was a British 60 pdr or a French 6-inch.

A model armoured train for the World War 1 period can be represented basically by the Boer War train described in the previous articles. The locomotive, searchlight car and rifle truck are ideal; the gun wagon could be improved by fitting a new gun, this time with a flat shield. Such a train could be used for Belgium in 1914, or Russia in 1917-19. The Maxim truck could be included, or a second flat bed truck used instead, sandbagged and holding riflemen and machine-guns. A second engine could also be produced for the Russian theatre, for the rival trains often engaged in slogging matches, though they rarely got within close range and most action would therefore be of the guerilla ambush or recce type, as in the Boer War.

Armoured trains were also employed in World War 2. The British again used them for defence against invaders, although not to the same extent as in 1914; and most World War 2 British trains were the traditional improvised type, with a light field gun as the heaviest armament. The French had a few to supplement the Maginot Line defences but most of their trains were for the larger rail guns, ie static firing.

Early in the war the Germans increased their mobility by seizing key communication routes, especially railways, and these were patrolled from about 1941 by improvised armoured trains, usually carrying only light armament. Penetration into Rus-



End view of the gun wagon showing the gun, ammunition boxes and centre partition.

sia meant longer lines of communication to keep open, against constant harassment by guerillas, and Germany then produced a number of armoured trains to patrol these lines and escort supplies to the front. In 1942-3, when the US daylight bombing raids began to hit German industry, flak trains were used in the Reich to provide mobile ack ack. Towards the end of the war tank turrets and occasionally old or captured tanks were mounted on rail trucks.

The Russians began to manufacture armoured trains in 1941, using improvised armoured wagons with tank turrets at first. Russian roads were poor and few in number at this date, and the railway system was vitally important for the movement of troops and supplies. The armoured trains were used to patrol the lines, but also to move firepower rapidly from one part of the front to another, and the custom-built armoured trains frequently carried heavy armament and became formidable 'land battleships' — as the original armoured trains had been.

For a model armoured train of World War 2 the Boer War locomotive could be used for a German one, with a second engine, built on similar lines, for the Russians. The main difference was in painting: the Russians usually painted their trains mottled brown and green or just green, while the Germans used panzer grey or field grey. The Boer War wagons are not really suitable for World War 2, although the rifle truck and searchlight car could be used (they are suitable for Britain) and we will therefore model two gun trucks to provide some heavy armament.

Tank turret truck

This could be either Russian or German, depending on turrets used and the painting. Any of the Airfix rolling stock bogie

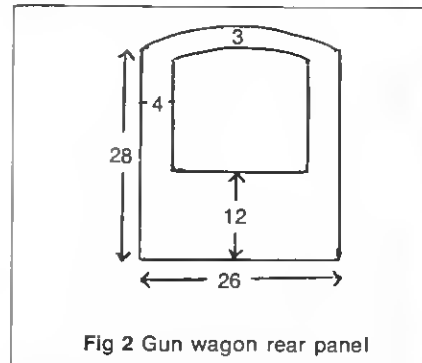


Fig 2 Gun wagon rear panel

and floor assemblies could be used, assembled as instructions, but I used the Esso tank wagon; partly because of difficulty in obtaining kits, partly to illustrate the potential of all the kits in the Airfix range. If using the Cattle Wagon or Brake Van base, make the minor adjustments to the floor section as described in earlier articles: if using the Esso wagon, assemble as instructions 6-19 after removing the four chocks and two round stubs for the oil tank on Part 9. Make your own choice of coupling system. Add a 22 x 38 mm panel of 30 thou card across the centre bars to bring the centre up to the level of the two ends then add a 24 x 91 mm floor of 30 thou card.

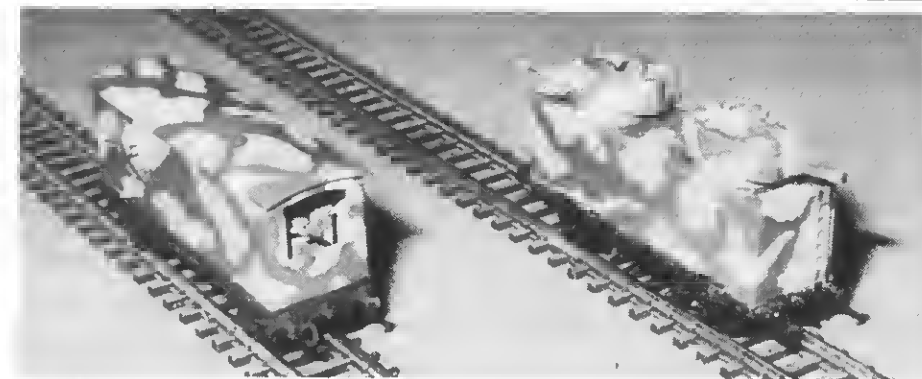
Cut two 94 x 25 mm side panels of 30 thou card faced with 10 thou riveted card. Cement to edge of new floor. The two end panels, and a centre panel to prevent warping, are 24 mm square and fit between the sides. They sit 1 mm lower. The two end panels are faced with 10 thou riveted card, the width of the 10 thou increased to 26 mm to conceal the corner joints.

The roof is 94 x 24 mm and fits between the sides and over the ends. Use 30 thou card topped by 10 thou, the latter measuring 94 x 26 mm. Before cementing the roof in place make holes to receive the turrets. I used alternative turrets from the T-34 kit and the holes were 20 mm diameter, their centres 20 mm in from each end. Finish off with ladders from the kit, cut to size, fixed at each end (access appears to have been through the turret hatches) and paint panzer grey, medium green, or overall sand and medium green. The oil tank can probably be used for some World War 2 installation another time.

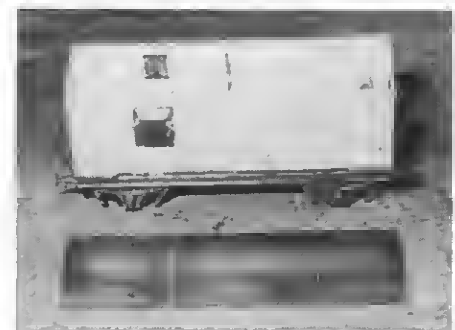
Gun wagon

This is based on a gun wagon portrayed in Purnell's *History of the Second World War*, page 2459. Use the bogie assembly of a Brake Van kit, instructions 1-10. Usual choice of coupling. On to this base are added two side walls as Fig 1 of 30 thou card faced with 10 thou riveted card. One end wall is 26 mm wide by 28 mm high, again faced with 10 thou which is 28 mm wide to conceal joints. Use a Part 30 or 31 to obtain the correct curve for the top edge. I cemented a 25 x 12 mm door on the outside of this panel. When modelling the searchlight car we discarded two pieces of Parts 24 and 29 from this kit: cut the observation panels from these and cement them over the 10 x 8 mm openings on the sides, shown in Fig 1. Add machine-guns, from AFV spares or micro-rod, in the slots.

The remaining end is sealed by a panel made as Fig 2, the 30 thou card being 26

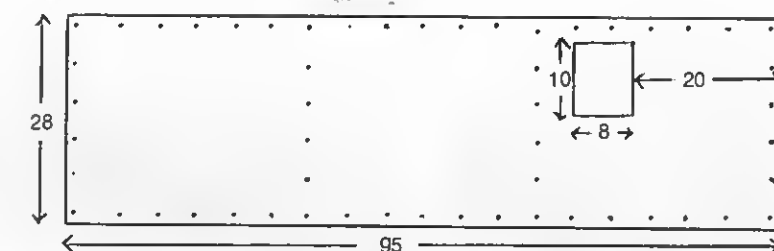


Above The two finished models. Below Gun wagon built on the Brake Van base. Note panel in middle to prevent warping, and the machine-guns.

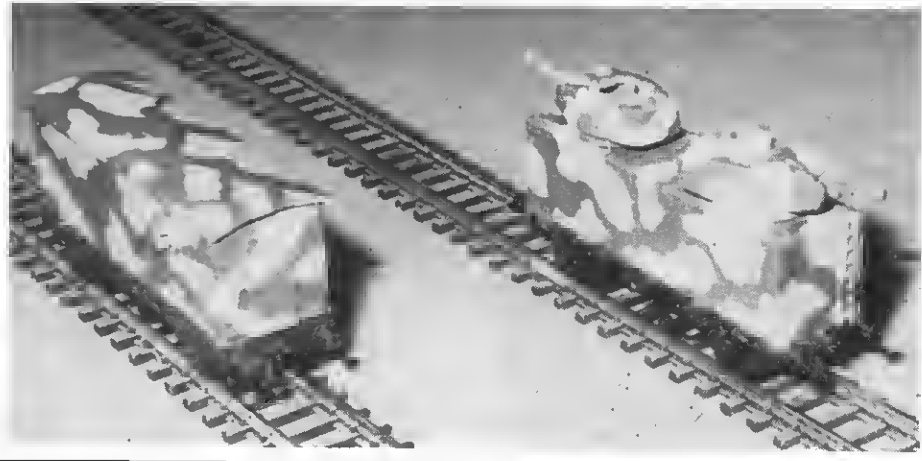


mm wide and fitting between the sides, the 10 thou surface 28 mm wide to hide the joint. A centre panel is inserted halfway along the wagon to prevent warping of the long sides: 26 mm wide by 30 mm high at the apex, curved as Part 30 and with a 25 x 12 mm doorway in the panel to allow movement between gun and machine-gun 'rooms.' Add ammunition boxes of balsa along the walls. The gun I used was from an

Fig 1 Gun wagon sides, two off, one reversed



Another view of the finished models seen from their other sides.



Talking wargaming — reviews

More ideas on terrain
from Donald Featherstone

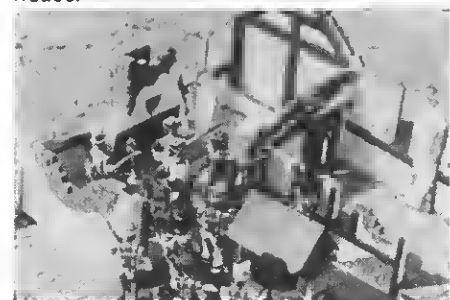
Artillery best come into their own on ground that is moderately undulating with long and gentle slopes, with few woods or cultivation, good roads and firm ground for wheeled movement. Ideally guns should be placed in positions that allow them to use their extensive range and give a coverless view of the enemy — but perhaps we are asking too much!

Terrain is more than buildings, woods and hills — it is a tactical factor that often controls the course of the battle. Few wargamers pay adequate attention to the influence of ground upon the tactical operations they are simulating on their table-top battlefields, not fully appreciating that ground affects view and movement and gives protection to each arm whilst giving full effect to that arm.

Cover from view is obtainable from quite gentle undulations and is of the greatest importance in positioning troops before serious fighting commences, or in secretly moving them from one point to another during an action, and in facilitating surprise. Cover from view does not necessarily protect from fire — hedges provide cover but not protection and should be utilised with caution because there is always a tendency to crowd men behind soft cover so that they present a dense target. On the wargames table where the wargamer towers above the field seeing everything, rules must be so formulated as to give cover its full value.

Ground affects movement by extending or limiting the front on which troops can advance and by controlling their speed over difficult surfaces. Generally speaking troops move faster on roads than across country although roads have been known to become impassable in bad weather after numbers of troops have traversed them — it took Grouchy seven hours to move less than five miles when pursuing the Prussians from Ligny in 1815 after rain had affected the roads. Rivers and marshes seriously impede the movement of an army by imposing delay and causing changes of formation, channeling the force into a specific crossing point. In real life such obstacles materially affect tactical operations because they make it difficult for the parts of an army to remain in communica-

Napoleonic skirmish in a ruined farmhouse.



tion with each other (before the days of wireless communication).

When constructing a table-top battlefield the basic essential is a firm flat table-top, ideally about eight by five feet. If the wargamer desires a sandtable (and most wargamers have aspirations in that direction at least in their early days) then he must have a strong and rigid base-board with 6-inch built-up sides; both table and floor beneath must be strongly constructed — because damp sand is very heavy! Undoubtedly the most realistic of the wargames terrains, the sandtable can be moulded into hills, valleys, sunken roads, river-beds, trenches, shell-holes, etc, suitably coloured and with trees 'planted' realistically. But sandtables have other snags apart from their weight — they are messy and the sand seems to spread everywhere; also their assembly is a time consuming operation.

Hills, valleys and undulating ground can be realistically simulated by stretching a green cloth or a plastic sheet over carefully placed mounds of books, slabs of polystyrene or pieces of wood. Rivers and roads can be painted in poster paint on to the plastic and made to look extremely realistic. Trees can be made from lichen moss stuck on to twigs, hedges from the same material; stone walls and rail fencing can be bought or made from balsa wood or plastic ceiling tiles. Bridges, castles, houses, etc, can be made from ceiling tiles and when suitably roughened up and painted, they make excellent crags and rocky outcrops. There are innumerable plastic kits of houses, factories, etc, on the market: specialised buildings can be scratch-built from card or balsa wood. Wargames table 'woods' must be open to allow troops to manoeuvre within them without knocking over the trees; three of four trees are placed around the perimeter of an irregularly shaped piece of hardboard which denotes the boundaries of the wood.

Good scenic terrain can be made by pre-fabricating semi-permanent features on to chipboard squares which are fitted together on the table-top so as to make up a variety of terrains. If the table is 8 x 5 feet then the squares should be 12 x 12 inches or 2 x 2 feet to conform; if roads and rivers emerge at the same point on each square then the squares can be permuted to make a variety of terrains. One square can carry a hill, another a farm or village; a sunken road section or a river and marsh can fill another with the squares fitted closely alongside each other so as to form perhaps a road running across the table, passing over a hill, crossing a river first by a bridge and then by a ford; at one point there is a side road winding through a wood skirting a ploughed field and leading to a farm. Very realistic scenic effects can be obtained in this way but these squares need adequate storage space or else they are damaged.

Historex Guards

RECENTLY received from Historex are samples of their latest releases, including Foot Grenadiers of the Imperial Guard in Campaign Dress.

The new kits are sold as 'Pochette Conversions'. Included in each conversion kit when purchased are three pairs of arms and legs in various positions. Where a greatcoat is included in the kit two sets are supplied, one to be fitted to a marching figure, and one to be fitted to a standing figure. Two hats, a bearskin and a bicorne are also included.

Of special interest to modellers will be the new equipment supplied, including an especially large pack, also a bearskin and tricorn in their covers. Articles of camp equipment are also included in the kit, among these are a mess tin, camp kettle and cooking pot. Three water bottles — a gourd calabash, one covered in wickerwork and an iron one — give plenty of choice to the modeller. Also available is a rolled standard in a waterproof cover and a covered shako.

The Guard officer is available in a short tailed coat and turned down boots. A rolled overcoat to be worn round the body is included. These new kits give immense potential to the many modellers and converters of Historex figures. We look forward to seeing the results of their efforts. All the new kits issued give very good value for money, and no doubt add many additions to the 'spares box'. The mouldings are to the usual Historex standard, first class.

Heller Bf 109K

THE MESSERSCHMITT 109 is always a popular kit subject and it makes a nice change to have a late mark of this German fighter available in kit form. Heller's 1:72 scale 109K makes it possible to produce every version and sub-type of this aircraft from currently available kits without having to turn one's hand to difficult conversion work.

Although the K, which was developed from the G, was only produced in small numbers and saw very limited service, it is an important aircraft as it illustrates the degree to which this versatile design was developed.

Cleanly moulded in light grey plastic, the kit captures the line of the K and has very fine surface detail, and Heller will surely not mind my saying that the mouldings are such that one could be forgiven for thinking they originated from Hasegawa; a backhanded compliment maybe which is not intended as any slight against the French toolmakers.

Cockpit detail is good and the 'Galland' clear type canopy is moulded in two sections so the modeller has the choice of leaving it open to show his interior handiwork.

As in the recent F-104 from Heller, the kit is let down by the decals which are well below the standard one has come to expect in modern kits. This is, however, of only minor consequence as the provision of accurate markings from many of the readily available specialist sheets presents no serious problems.

Modeldecals

THE QUALITY of Modeldecals is such that they are now accepted as one, if not the world's, best specialist decal sheets, and with each issue the reviewer's task becomes more and more difficult. But this time the company



NEW KITS AND MODELS

have certainly given us something to comment on since sheet 31 features aeroplanes with those funny things known as propellers on the front instead of their usual offering of markings for animated stove pipes. Not content with this shock they have doubled the medicine by not only featuring propeller-driven aircraft but biplanes to boot!

There will be many modellers who yearn for the days of open cockpits, rigging wires, and silver doped biplanes who will be so overcome with emotion at the sight of this sheet that it will be some time before they can steady their modelling hand long enough to undertake the task of producing the Fury, Bulldog, Gladiator and Siskin models to accept these superlative markings. The Fury is a No 1 Squadron aircraft, the Bulldog a 23 Squadron machine and the Gladiator captures the distinctive paintwork of No 87 Squadron. The black and white checks of No 43 Squadron are reserved for the Siskin, and in addition there are two separate squadron spearhead emblems for a Gladiator 1 of No 80 Squadron and a camouflaged Fury of No 43 Squadron. If this is not enough there are also a quantity of spare 25-inch diameter pre-war style roundels.

As usual there is a superbly drawn and presented instruction sheet which leaves absolutely no doubt as to where the markings are placed, and a separate sheet containing eight photographs. At 60p (including VAT) plus 15p post and packing for up to two sheets and 18p for three or more, this issue, which as usual is available from the sole UK distributor, Modeltoys of Portsmouth, is excellent value, so snap up those Airfix, Frog and Matchbox bipes, lay in a stock of silver paint and take a trip down memory lane.

The second sheet, No 32, which is priced as 31 and available from the same source, brings us right up to date as far as latest kit releases are concerned as among the aircraft featured is the Sea Vixen FAW 2. Again comment about the quality would be wasted, similarly the mind boggles at the attention given to detail and careful selection which enables a seemingly endless permutation of codes and serials to be produced for a variety of Sea Vixens.

Main markings are for aircraft of Nos 766, 892, 890, 893 and 899 Squadrons, and worthy of note is the inclusion of no less than 50 inches of red striping with which fuselage access panels can be marked. National markings for the Sea Vixen are taken from the Frog kit and suggestions are made on the instruction sheet as to the use of the kit serials plus those from the Modeldecalsheet to produce a change of serials to match some of the markings provided.

Other aircraft featured on this sheet are a Danish Air Force F-100D, a Mystere B2, and a variety of French l'Armée de l'Air Jaguars.

The comments concerning instructions and photographs made in respect of sheet 31 equally apply and both these latest issues are very highly recommended.

Revell Mirage

REVELL'S experience in producing 1:32 scale kits of this delta-winged French aircraft seem to have been put to excellent use in producing what must rate as one of the best releases to date of the Mirage in 1:72 scale.

Parts and decals for a 111E, S, R or RS are provided so the modeller is faced with an early decision as to just which version he

wishes to produce. If there is any doubt in this department a final decision can be left whilst the Snecma Atar turbojet is assembled as this is supplied as a removable component.

Cockpit detail is very good and enables stage three to be reached still without having had to decide the final format of the model.

It becomes very evident that this kit is scaled down from the 1:32 scale versions when the delicate mouldings are examined closely and of particular note are the engine intakes, ejector seat, undercarriage components and the external stores. The latter include ten bombs, two Sidewinders, two styles of underwing tanks and, of course, the assorted pylons.

The canopy comes in two separate parts and can be left in the open position if so desired.

Decals in the review sample were slightly off register but this aside were well printed



Above Matchbox's new Messerschmitt Bf 110 in 1:72 scale which we shall be reviewing properly shortly. Below Third of Revell's 1:28 scale re-releases, the 'Red Baron' Fokker Triplane.



NEWS FOR WARGAMERS

Wargames Rules for the Sixteenth and early Seventeenth Century (1490-1660), by George Gush. Wargames Research Group, 75 Ardingly Drive, Goring-by-Sea, Sussex. Price £1.30 post free (USA \$3 sea, \$4.50 airmail).

THE LOGICAL successor to George Gush's earlier book *Renaissance Armies 1480-1650* (PSL, £4.25), this is a complete set of wargaming rules for anyone interested in the period ranging from the Italian Wars to the English Civil War. Designed to the usual WRG style, it includes sections on scales and troop types; points values; weapon use (eg when firelocks may be used, etc); orders; movement; disorder or disorganisation; shooting; melees; flight, pursuit and prisoners; reaction tests; and field fortifications.

At the end is a useful table classifying the various colourful troop types available to the wargamer in this period, and the usual pair of separate quick reference sheets for use during play.

As one would expect from a history lecturer with such unrivalled knowledge of this period and such experience in wargaming, the rules are well thought-out, easy-to-follow and with no obvious inconsistencies on a first read, although we have had no opportunity to play test them as yet.

Considering the large numbers of troop types and weapons deployed during this period, George has done a remarkable job in compressing them within a logical framework and allowing armies of totally different types to fight against each other with reasonable chances of success for both sides.

Westwall

BETWEEN THE time of the Day-Day landings of June 6 and early September 1944, when the Allied advance had run out of steam, the Germans had lost an estimated 700,000 men in France and Belgium. Montgomery and Patton both believed that a final thrust across the Rhine into the heart of Germany would finish the war. Eisenhower, the Supreme Commander, preferred an advance on a broad front, and in any case the Allied lines of communication were so stretched that it would have meant halting all other operations to find the resources for a single thrust of the sort visualised. Under continued pressure from his two subordinates, Eisenhower eventually agreed to a proposal put to him by Montgomery and having a limited objective — the seizure of a single bridge across the Rhine. It was unfortunate that this decision coincided with the rallying of the retreating German forces and their consequent stiffening resistance. It was a fact which none of the senior commanders recognised. Their first intimation came with

the failure of Montgomery's 'Operation Market-Garden'.

This venture, and its highlight, the battle of Arnhem, is the subject of the first game in SPI's 'Westwall' QuadriGame. By pure chance I had just finished reading Cornelius Ryan's excellent account of the battle, *A Bridge Too Far*, and so I found myself taking particular interest in this one. The QuadriGame series is easy to criticise for its lack of detail, but if judged by the same criteria its designers aimed to meet, 'Westwall' gives fair value. I found the Arnhem scenario as exciting as the real thing, and the third battle of the set, Bastogne, was nearly as good.

The siege and eventual relief of Bastogne during the German Ardennes counter-offensive of December 1944 (better known as the Battle of the Bulge) allows two scenarios for this game — the initial German advance and Patton's relief attempt. Both are a race against time, as is the case with Arnhem, and it is probably this element of excitement which enables the players to overlook the drawbacks of the QuadriGame system and to just sit back and enjoy the freedom from detail commonly found in more 'realistic' simulations.

The two other games that make up the set are Hürtgen Forest, which was part of the American attempt to widen the breach in the West Wall made earlier by the capture of Aachen on October 21 1944, and Remagen, the establishment of the first bridgehead over the Rhine in early March 1945. The latter game has been heavily doctored by the designers to give the Germans a reasonable chance of winning! Hürtgen Forest is fairly balanced, though, like Bastogne, it represents only a part of a broader scene whose elements could have affected the local issues at stake.

To sum up, 'Westwall' presents four battles that span the period September 1944 to March 1945 which saw the Allied effort to break through the Siegfried Line and establish a bridgehead across the Rhine. The battles were selected to show the first attempt, the German counter-offensive, the resumption of the Allied advance and lastly the first successful capture of an intact bridge over the last natural barrier into Germany. The choice is reasonable and I think Arnhem at least deserves to become a favourite. 'Westwall' is available from Simulation Publications UK, Dept A24, Freepost, Crown Passages, Hale, Altrincham, Cheshire WA15 6BR, for £6.75.

War in the West

THIS IS another of SPI's enormous strategic games which complements the previously published 'War in the East' and combines with it to make one massive game of the

whole European war 1939-1945.

The big problem is the game's sheer unwieldiness. The playing area is composed of no fewer than nine maps, each one of which is the size of an ordinary boardgame, which combine to give a complete picture of Europe from as far east as Moscow and Stalingrad, north to Norway and Finland, south to the Western Desert, and west to Britain and Spain. This map occupies practically the whole of any normal room's floor!

Similarly, there are no fewer than 2,400 game counters representing land, sea and air units, while to replay the entire war in the West requires some 300 game turns.

For the average board wargamer, this is far too much to cope with unless the game can be set up on a semi-permanent basis, although there is scope in the rules for enacting individual campaign scenarios only requiring one or two of the map sections and a fraction of the total playing counters.

Nor can the maps be joined and hung on a wall, the counters being affixed with 'Blue Tack' or similar, as is possible with many games, since the counters are printed on both sides.

However, if the basic space and time is available, 'War in the West' could undoubtedly be one of the most absorbing and challenging board games yet produced. We have had neither in which to play test it properly as yet, so all we can do is outline the game's potential — which is enormous.

The basic mechanics of play are considerably simpler than in many smaller games — as they need to be. There are only five movement phases — basic ground; rail; sea; air; and mechanised (ie breakthrough) — and the counters only contain one basic combat and movement factor each. Combat results are determined by the usual methods and, thanks to the double-sided printing, step-down attrition rather than total annihilation is possible.

Where the game becomes complicated is in the introduction of various air and sea movement capabilities, types of movement, and combat, and it really requires several players on each side to handle these in addition to the various strategic and economic considerations: a C-in-C for each major participant at least (Germany/Italy and the Western Allies); someone to handle resources allocation for all sides (particularly the Germans); someone to control each zone of ground warfare; someone to control each railway building and maintenance system; someone to handle the navy, amphibious assaults and transport; and someone to handle the air war aspects. In other words, a team of a couple of dozen conscientious players. This makes it ideal for club use.

The Russian conflict is not included in 'War in the West', this sphere of operations being handled abstractly unless the game is combined with 'War in the East'.

Although 'War in the West' appears daunting, it will undoubtedly have a wide appeal, and we hope to be able to report more fully on it when (in about ten years' time!) we've had a chance to try it properly. It is available from Simulation Publications UK, Dept A24, Freepost, Crown Passages, Hale, Altrincham, Cheshire WA15 6BR, for £15.50. ('War in the East' costs an additional £10.99.)



BOOKS FOR MODELLERS

Modelling

Airfix Magazine Annual for Modellers 6, edited by Bruce Quarrie. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. Price £2.50.

'NOW WITH COLOUR!' it exclaims on the cover of this, the latest *Airfix Magazine Annual*, and we at *Airfix Magazine* are proud that we have at last been able to offer our readers this feature. There are, in fact, four full-colour articles within the annual's 100 pages: one on detailing the old Airfix 1:72 scale MiG 15 kit and converting it into the two-seat trainer version, which includes several colour side views of alternative marking schemes from Martin Holbrook; another on Luftwaffe fighter heraldry, with colour illustrations by the same artist. (Both these articles are written by Bryan Philpott, of course.) Then Bryan Fosten on Napoleon's Chasseurs à Cheval de la Garde; and finally Gerald Scarborough on German Steyr 640 trucks, with modelling details, scale plans, and colour scheme paintings for different types in different theatres. Scale drawings for the MiGs and Steyr trucks are printed on the annual's endpapers, which really means it is 104 pages long — an extra bonus.

In addition to these colour features, there is the usual gamut of popular modelling subjects, which range from ancient Roman artillery pieces — an onager and balista — complete with crew figures in 1:32 scale converted from Airfix Highlanders by Ron Wood, to detailed notes, drawings and photos on South African Mirage fighters, by Richard Gardner. Michael Bowyer provides not only the captions to the ever-popular Photopage and Photo Quiz features (compiled from photos sent in over the years by you, our readers); but also an article on the development of the Highball Mosquito, a variant employing the same principles as the dam-busting Lancs but designed to sink the *Tirpitz*: a brilliant piece of improvisation which never actually saw action. To complement this feature Gerry Preece shows how to convert the Airfix Mosquito kit into the Highball version.

Another feature for aircraft modellers, especially topical in view of the fact that an American vac-form company is producing 1:72 scale kits in the near future, is Alan Hall's historical description of Britain's Valiant, Victor and Vulcan 'V' bombers. (At least one injection-moulded kit is also strongly rumoured to be just round the corner, at long last.) Both this article and the Highball one feature drawings by David Dean, another magazine 'regular' whose excellent work will be well known to all our readers.

For military modellers there are several projects, including a Matilda CDL and the special crane tank used for changing its turret, by Terry Gander; a 1:32 scale

motorised infantry section in the Western Desert utilising a scratch-built truck and figures converted from the new Airfix 8th Army Multipose set; and the little German Sdkfz 223 radio car converted from the Airfix Sdkfz 222 armoured car by Gerald Scarborough.

In addition to these there are also fascinating articles on constructing a naval diorama depicting HMS *Campbelltown* during the St Nazaire raid, by Roger Chesneau; a model paddle steamer tug suitable for use with model railway layouts, converted from the Airfix *Great Western* kit by Michael Address; and a 1:32 scale Ford Model T van from Noel Smith.

All in all, this year's annual is very much 'the mixture as before', but more so. We know you'll like it.

Making Model Aircraft, by Bryan Philpott. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. Price £3.95.

BRYAN PHILPOTT'S aircraft modelling articles have been a regular feature of *Airfix Magazine* for many years and his high standards will already be appreciated by most of our readers. He has also written three previous books on modelling, two of which (*Airfix Magazine Guides 2 and 16*) have already sold in their thousands, and a natural first thought on seeing this new book might well be: what more can he say? Fortunately, the answer is: plenty.

This book begins from the premise that anyone reading it has already made at least a few model aircraft kits, and is conversant with elementary construction techniques. From that point it then describes and illustrates a variety of more advanced modelling methods and ideas which will enable the careful modeller to improve his standards by a considerable margin.

Typical examples of the type of techniques described include how to obtain realistic natural metal finishes by the use of either Metaskin or Rub 'n Buff; various different ways of rigging biplanes; the use of airbrushes and how to resolve some of the problems which may arise with them; making your own markings; and a variety of others. Of especial interest is the section showing how to build a home vac-forming machine powered by an ordinary domestic vacuum cleaner, a simple device based on the design of the American Mattel vac-form toy.

Apart from general advice on topics such as these, the book includes specific chapters on constructing 'solid' models from wood; kit conversions; and scratch-building in plastic card. The techniques of carving and sanding balsa and other woods are appropriate even to those modellers who have no intention of trying, since many is the time when a balsa former will be required to mould new canopies, drop tanks and even whole fuselage sections,

etc. This chapter is illustrated by a detailed description of how to model a Hawker Swift in 1:48 scale by Dick Ward (of Modeldecals fame), the only problem being that, due to the page size of the book, the plans are not reproduced to the correct scale. However, earlier in the book there are descriptions of various methods of scaling plans up or down when correct ones are not available, and the Swift provides an excellent first practical exercise in this.

Similarly, the chapter of kit conversions includes two aircraft — a Nimrod converted in 1:144 scale from the Airfix Comet, and a Hasegawa Neptune conversion in 1:72 scale, where once again the plans have been reproduced to well below the correct scale. The other conversions do include plans to the right scale, and range from a little Miles M20 in 1:72 to an American Navy Fury — a major undertaking if ever there was one — and a Merlin-engined Beaufighter in 1:32 from the Revell kit.

Finally, there is a chapter on the special techniques required to assemble vacuum-formed kits such as those made by Rareplanes, Contrail and Airframe; and scratch-building from plastic card, which includes a detailed description and scale drawings of a Comper Swift in 1:36 scale made by IPMS champion Tony Woollett.

Throughout the book, the text is lavishly illustrated with black and white photographs as well as dozens of the superb drawings with which Martin Holbrook is rapidly establishing a first-class reputation in the modelling world. It can thus be highly recommended to all aircraft modellers who take their hobby seriously (which means all readers of this magazine) regardless of age or experience.

Aviation

Airfix Magazine Guide 18: USAAF Camouflage of World War 2, by Jerry Scutts. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. Price £1.40.

ALTHOUGH THE vast majority of US Army Air Force machines during World War 2 were either left in natural metal finish, or camouflaged simply in Olive Drab and Neutral Grey, the wide variety of individual unit markings, mission insignia and individual crew artwork makes them a bewildering subject to study. This excellent new book from artist and historian Jerry Scutts steers the reader logically through this maze, and provides an ideal introduction to any serious study as well as a superlative quick ready reference for more experienced enthusiasts.

After an introductory chapter which outlines the basic schemes and gives details of national insignia and mission markings, the book is divided into individual aircraft headings. Thus, for example, it is a simple matter to look up, say, the B-17, and see at a glance that this aircraft saw service with the 5th, 7th and 10th Air Forces in the Far East, the 8th AF in Europe, and the 12th and 15th AFs in the Mediterranean theatre, while under each AF sub-heading is a description of the unit markings and their colours.

Each section is accompanied by black and white photos showing, where possible, nose art, personal names and other individual insignia with colour notes, permitting different aircraft to be modelled; plus

numerous profile drawings of typical aircraft by the author.

A useful appendix listing 8th AF fighter and bomber code letters completes this book, which ideally complements the earlier titles in this series on Luftwaffe and RAF camouflage (Nos 10 and 11).

Luftwaffe Camouflage & Markings 1935-45, Vol 2, by J. R. Smith and J. D. Gallaspy. A Kookaburra book, distributed in the UK by Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. **Price £8.50.**

LUFTWAFFE enthusiasts will already be familiar with the first superb volume in this three-part series from Australian publishers Kookaburra, and will need no encouragement to rush out and buy volume two immediately!

Covering the period from the Battle of Britain until the beginning of 1943, it includes specific chapters on the B of B, the North African campaign and the early campaigns in the Balkans and Russia, and is without doubt the most definitive and accurate book on German aircraft camouflage and markings of this period ever to have been published.

Meticulously researched over a period of years, it includes over 300 black and white photos of Luftwaffe aircraft of all types, together with dozens of full-colour wartime photos and careful paintings of representative types by Geoffrey Pentland.

The colour notes written by the latter are especially invaluable for modellers, explaining as they do many of the difficulties of interpretation which have resulted in much inaccurate information and illustrations being published in previous books on this subject, while the paintings themselves are first-class.

All the illustrations have been reproduced as large as possible, and the majority will never have been seen before by English readers.

If you model Luftwaffe aircraft, or simply have more than a passing interest in the subject, then this is a book which you must have. The colour plates alone are worth the asking price!

Aircraft Annuef 1977, edited by Philip J. R. Moyes. Ian Allan Ltd, Terminal House, Shepperton, Surrey. **Price £2.75.**

THIS, THE latest in Ian Allan's popular and well-produced *Aircraft Annuef*s, contains the usual selection of illustrated articles on all types of aircraft, ancient and modern.

Elfan ap Rees leads off with a feature on modern helicopters, describing their various roles ranging from rescue machine or ambulance to crane, fire-fighter, anti-submarine and anti-tank weapon. Then Maurice Allward describes the development of the Russian MiG 25 Foxbat with, unfortunately, only one well-known photo of this potent machine. A touch of colour follows in John Batchelor's description of a day at the American flying display at Old Rhinebeck, the approximate equivalent of our Shuttleworth, then military historian Jenny Shaw relates the story of the US strategic bomber offensive over Germany, with many fine photos of B-17s and B-24s.

The Fleet Air Arm today is next described and illustrated by Peter March, then there is an interesting feature by Bruce Robertson on 'period pairs' — basically aircraft 'then and now' — for example, a photo of

the surviving Lancaster, PA474, alongside one of her 'original', KM:B-L7578. Roger Bowden follows this with an interesting 'behind the scenes' description of Manchester airport, then there is a truly fascinating feature on Royal Flights and Royal aircraft from 1918 to the present day, with many unusual photos, from Philip Birtles. The same author also provides another feature on the Mosquito Aircraft Museum.

The Annual's second colour feature, on the current ballooning craze, is followed by what many readers will regard as its best article — J. Richard Smith's Me 262 war diary, which again includes some very attractive photos. Finally, 'Collectors' Corner', by Philip Jarrett, is a selection of attractive photos of rare and interesting aircraft, mainly of the inter-war period.

Military

Airfix Magazine Guide 17: British Tanks of World War 2, by Terry Gander and Peter Chamberlain. Patrick Stephens Ltd, Bar Hill, Cambridge CB3 8EL. **Price £1.40.**

THIS CONCISE but highly detailed book is an invaluable quick reference source on every British designed and built tank during the last war. The ideal companion to the same authors' earlier book in the same series, No 8: *German Tanks of World War 2*, it includes a narrative outlining British tank theory, design and use before and during the war, together with technical sections on each vehicle complete with numerous photos, four-view 1:76 scale plans and data tables. Tanks included range from the diminutive Vickers Light Tanks through the various interim Cruiser designs leading eventually to the Crusader, Cromwell and Comet, and including the heavy Valentine, Matilda and Churchill Infantry Tanks.

Also included are brief notes on American tanks in British service, although these will be covered in more detail in a forthcoming title in this series; on British tank armament; and on camouflage and markings, making this title a useful addition to the bookshelves of every military modeller, historian and wargamer.

Arms and Uniforms, The Second World War, Part 3, by Liliane and Fred Funcken. Ward Lock, 116 Baker Street, London W1M 2BB. **Price £3.95**

THIS IS THE latest offering from the prolific pens of Liliane and Fred Funcken, and is comparable in standards to their other well-known works. As we've said before, however, they should really stick to uniforms and leave tanks, aircraft and ships to those artists who specialise in these subjects; the quality and accuracy which enthusiasts in those subjects require just isn't here.

So far as the uniforms are concerned, however, we've no complaints. Perhaps the detail sketches of collar insignia and badges, etc., isn't sufficient for the requirements of militaria collectors; but it is certainly more than adequate for the average figure modeller or wargamer.

Armies covered in this volume are principally the Norwegian, Finnish, Italian and Italian allies (Croatia, Bohemia-Moldavia and Slovakia); plus sections on the 'motorised' forces of France, England, Germany, Italy and Russia; a section on the sea war with the emphasis on British and

French vessels; and one on the war in the Far East with descriptions of the American, Japanese and Chinese forces involved.

The text is brief and a little patchy in places, as well as being full of semi-serious remarks such as 'this mortar could drop a bomb through the open turret of an enemy tank as easily as a basket-ball player scores a goal' rather than precise hard data tables.

With the wealth of colour plates this volume, like the others, is unquestionably good value for money, but we feel L & F would have been better off using photos instead of sketches in many cases.

World War II Tanks, by Eric Grove. Orbis Publishing Ltd, 20-22 Bedfordbury, London WC2. **Price £4.50.**

IF YOU'VE already purchased any of this company's earlier 'World War II Special' paperbacks which retail for 60p, then don't bother with this 'new' book. It's a simple reprint, in hard covers, of the previous volumes on Axis and Allied tanks, with all the same photos, colour artwork and text, plus a foreword by Field Marshal Sir Michael Carver. Admittedly, the reproduction quality here is superior to that in the paperbacks, particularly as far as the colour goes, but it's not worth forking out £4.50 to obtain basically the same information twice.

Forgetting the reprint aspect and considering this as a book in its own right for the benefit of readers who may not have purchased the paperbacks, it's not bad. In fact, it is very good. The text is readable and clear, data tables being kept separate; there are hundreds of photos, many of them original wartime colour shots; and there are dozens of full-colour paintings of the various vehicles (all in representative markings, unfortunately, rather than depicting specific vehicles of specific units) showing basic camouflage schemes and colours.

Nationalities covered are Germany, Japan, Poland, Italy, Britain, France, Canada, Russia and America. However, this sort of big, glossy, colourful compendium of vehicles has been done so often before one seriously wonders whether there is really a need for another.

The North African War, by Warren Tute. Sidgwick & Jackson Ltd, 1 Tavistock Chambers, Bloomsbury Way, London WC1. **Price £6.50.**

THIS MASSIVE volume is a detailed account of the war in the Western Desert between 1940 and 1943. Meticulously researched and written in a lively style which holds your interest throughout, it concentrates on the planning and execution of Operation Torch, presumably to give a new slant on a well-trodden path and to encourage American buyers. However, since the story of the 8th Army's battles against Rommel's Afrika Korps has been related endlessly before, this slant is justifiable since Mr Tute has succeeded in unearthing a great deal of 'new' information on the behind the scenes planning in the Allied camp.

The book is illustrated with hundreds of black and white photos, most of them unfortunately 'old hat' and at least one mis-captioned (the 'Valentine' on page 49...); plus a colour section of photos from both the German and Allied viewpoint,



though once again, most of these have already been published elsewhere.

Japanese Infantry Weapons of World War Two, by George Markham. Arms and Armour Press, 2-6 Hampstead High Street, London NW3 1PR. **Price £4.50.**

THE NUMBER of books devoted to the Japanese Army has been growing steadily over the last few years and this work will be a most useful addition to the list. It covers in some detail all the various Japanese Infantry weapons used during the years 1941 to 1945, and there are numerous illustrations. As well as the usual rifles, pistols and machine-guns, the coverage extends to such odd items as flare pistols, grenades and swords. There is also a small section on infantry guns but compared with the depth of information made for other weapons this section is very sparse and leaves an impression of being incomplete — for instance there is no mention of the 37 mm Type 94 having its origin as an anti-tank gun, and the 37 mm Type 11 was a copy of the French trench gun, and was not copied from the American M1916. Some other rather odd statements are made in other sections but these do not detract from the general standard — perhaps these oddities come from what appears to have been a general reliance on American Intelligence reports. The book runs to only 96 pages so the asking price of £4.50 is rather high.

Attack Warning Red, by Derek Wood. Macdonald and James Publishers Ltd, Paulton House, 8 Shepherdess Walk, London N1 7LW. **Price £8.50.**

THE ROYAL Observer Corps has been granted rather less than its fair share of recognition right from its very early days and at last this book will go a long way to put the Corps on the map. *Attack Warning Red* is the history of the ROC right from its origins in the raids on London during the Great War up to the present day.

The author is well qualified to write this book as not only is he a well-known author and journalist but he also runs a very efficient post in Sussex, and this latter qualification shows in the detailed study and observations that are made in these pages.

The ROC has always been a bit of a renegade outfit when compared with the other 'establishment' public services mainly due to the wide range and variety of people that have always been drawn by some strange forces to its ranks. The number of 'characters' one is likely to meet in even a short stay in the Corps is remarkable and, as the book says, it is not unusual for a barrister to serve on a post run by a bricklayer. This unusual system has been one of the Corps' strengths over the years and it shines through all the chapters on the Corps in war and peace.

The story of the ROC is readable enough but this book is enhanced by the way even such awkward things as reporting sequences are written, for the writing is lively and informative. For many the bulk of the book should be the years from 1939 to 1945, and indeed these chapters are among the best in the book. But 1945 was over 30 years ago and so there is much to cover since then.

Those 30 years have seen the gradual

changeover from the Corps' traditional role of aircraft reporting to nuclear warning and monitoring, and this changeover story is well told. Many outside the ROC will no doubt be surprised at the scope of the modern ROC as the present trend of successive ministries is to keep the role of the ROC out of the public eye, so it is refreshing to see the Corps put into its proper perspective.

Thus in these pages we can at last see the detail of ROC Posts and Centres and the importance of their communication networks. There are numerous illustrations and maps and the overall standard of production is high. At the back there are several appendices, the largest of which is a list of all the locations of ROC posts throughout the country, a major work in itself.

But it has to be said again that the strength of the ROC has always been the diversity and character of the many who have been in its ranks, and this book at last places their considerable history on record. As many will already have noticed the reviewer spent some years in the Corps and can thus vouch for this book's value and accuracy. It should be on the shelves of all with an interest in the defence of the UK and is well recommended, and it will certainly have a prominent position on my bookshelves. It brings back many memories... dear old 2/Papa Wun!

Naval

Combat Fleets of the World 1976/77, edited by Jean Labyle Couhat. Arms and Armour Press, 2-6 Hampstead High Street, London NW3. **Price £14.50 net.**

THERE HAS existed in France, since 1897, a naval encyclopaedia of high repute which has, in every other year, tried to give descriptive details of all naval vessels, aircraft and armament in service at the time of going to press. This year for the first time 'Flottes de combat' appears in English as *Combat Fleets of the World 1976/77*.

All naval vessels currently in service in the world are set out in tabular form, by country, in classes, ranging from capital ships such as the USS *New Jersey*, down to the odd numbered patrol boat that doesn't warrant a name. All entries carry information such as who built the vessel, when was she laid down and launched, displacement and main armament. In most entries there is a section for remarks which give interesting additional details such as the fact that the Brazilian aircraft carrier *Minas Gerais* was formerly HMS *Vengeance*, sold to Brazil in 1956 and extensively refitted and rearmed in Rotterdam in 1960.

There are hundreds of good quality black and white photographs of all types of vessel throughout the book which has 575 pages.

In a dwindling and ever more expensive world of naval reference material this book is very good value. Good concise detail of 6,300 ships for £14.50 or .0023p per ship can't be bad!

German Werships of the Second World War, by H. T. Lenton. Macdonald and Jane's, Paulton House, 8 Shepherdess Walk, London N1 7LW. **Price £6.50.**

FOLLOWING A narrative introduction which

explains the rebuilding of the German fleet during the inter-war period and construction of other vessels during World War 2 itself, this superb, large, fat book describes the entire wartime German fleet, from battleships down to auxiliaries, and including submarines. It includes hundreds of photos from a variety of sources, as well as general arrangement drawings of many types.

Data includes ships' names, builders, dates of launching and eventual fate, plus class details of displacement, dimensions, machinery, armament and complement, but there is also a brief narrative with each assessing the ships' design and performance which is particularly handy.

Many of the photos show clear details and camouflage schemes, making this book of some value to modellers, although its principal home will undoubtedly be on the shelves of naval historians and wargamers.

Jane's Pocket Book 8: Submarine Development, edited by John E. Moore. Macdonald and Jane's, Paulton House, 8 Shepherdess Walk, London N1 7LW. **Price £2.95 (cased), £2.25 (PVC).**

A Source Book of Submarines and Submersibles, written and compiled by Anthony Watts. Ward Lock, 116 Baker Street, London W1M 2BB. **Price £2.25.**

Submarines in colour, by Bill Gunston. Blandford Colour Series, Blandford Press, Link House, West Street, Poole, Dorset. **Price £2.75.**

HERE, ALL within the £2-£3 price range and all published in recent months, are three excellent little books on submarines, and it's difficult to pick a favourite because they've all got something different to offer despite covering essentially the same ground (water?).

The Jane's book is divided by nationality, and traces the development of naval submarines from the end of the 19th Century to the present day. Each is illustrated by at least one clear photograph and described in a basic data table, with notes.

Anthony Watts' book is arranged in chronological progression and, instead of attempting to list all types, includes instead 'significant' submarines and submersibles, including research and experimental craft. Once again, each description is accompanied by at least one photo and a data table.

Bill Gunston's book is also a chronological account, but it goes back earlier than the other two, including descriptions of De Son's design of 1653 and Bushnell's 'Turtle' of 1776, the first submarine known to have been used against an enemy. Instead of photos, this book contains dozens of full-colour paintings of submarines, including detail sketches and cutaways. It also has a narrative text at the back instead of the simple data tables of the other two books (although it includes these in tabular form at the end), plus a useful appendix on submarine and anti-submarine weapons.

Overall verdict then: the naval historian will want the Jane's book; the interested layman can take his pick between the other two largely dependent on whether he prefers to see photos of real ships or colour drawings. All three books are well worth purchasing, however.

PHOTO PAGE

Reader's photographs described by Michael J. F. Bowyer

READER H. CREWE has sent us a good set of photographs of Supermarine Walrus in naval hands taken before the war.

No 1 shows L2122 K9C which Mr Crewe says belonged to No 715 Squadron and was carried aboard HMS *Birmingham* in 1939. No 2 depicts L2187 uncoded during transit between Britain and China in February-March 1939, also on HMS *Birmingham*. Photos 3, 4 and 5 depict the air-

craft with letters applied after their arrival in the Far East to join the 5th Cruiser Squadron. WT is L2188, WS:K8539 and WU:L2212. The latter can be seen to have a drogue towing winch in position. Photo 6 is of L2189 after its recovery from the waters of Hong Kong harbour. Mention of that event can be found in the late Lt Cdr Nicholls's book *The Supermarine Walrus*.



LETTERS TO THE EDITOR

Sterling small-arms

A POSTSCRIPT from the Aldershot Defence Equipment Exhibition can be made by the mention of two new weapons from the Sterling Armament Company Ltd. These new weapons are both variations of the American Armalite AR-18 Combat Rifle which is made by Sterling under licence. This rifle is now being made by Sterling in preference to their own 5.56 mm Light Automatic Rifle.

The first version is the AR-18 BP Combat Rifle which is a re-arrangement of the basic AR-18 to a 'bull-pup' configuration where the magazine is behind the trigger mechanism. This version is intended as a police weapon, but is still in prototype form only.

The second version, also based on the AR-18, is the AR-18 Light Machine-Gun where the normal barrel has been replaced by one which is heavier and has a quick-change mechanism. A bipod is also fitted and a 30-round magazine makes it more suitable for the machine-gun role. Both these new weapons are chambered for the American 5.56 mm cartridge. As Sterling products are already in use in over 80 countries it would seem very likely that these two new weapons will see some degree of export success. Terry Gander.

Matchbox TS16

I READ with concern in the July issue of *Airfix Magazine* the review of our Matchbox

TS16 Racing Car.

Unfortunately there is a very bad error in the review regarding our policy of moulding in more than one colour.

The Bang & Olufsen car was red and black as your reviewer so rightly pointed out. However, if you wish to depict the car in Matchbox colours you will have to make some major changes to the actual shape of the car as the two models are different. It was not our intention for the modeller to make both versions from the one kit and nowhere on our packaging or instruction do we suggest that you should.

Our policy of moulding in more than one colour on our car kits has been to be as authentic as possible regarding body colours and we could name many prestige American and Japanese companies that do the same.

As you know I do not make a habit of questioning reviews but your reviewers expression of 'childish gimmickry' was in my opinion totally unfair and as I am sure you wish to be considered unbiased to the world kit manufacturers at large, that you will wish to correct this error in your next issue.

J. Reynolds, Design Manager, Lesney Products Ltd.

Armoured trains

I WAS MOST delighted to see the article on armoured trains in the July edition of your



Above The Sterling AR-18 BP combat rifle. Below The AR-18 light machine-gun (Terry Gander).



Contributions

Letters to the editor selected for publication entitle the senders to each receive a free Airfix plastic construction kit, and the publication of photographs from readers is similarly rewarded. Airfix Products Ltd award the kits on the following scale:

ONE letter or photograph published is rewarded by any kit from Series 1-8 inclusive. For TWO letters or photographs any one kit up to and including Series 12 can be chosen, or alternatively two kits up to Series 8. For THREE contributions the entitlement is any one kit from Series 1 to 20 inclusive, or any one kit from Series 1 to 12 plus two kits from Series 1 to 8, or any three kits from Series 1 to 8. Readers can make their choice on the special form which we send out after publication. The kits are supplied direct by Airfix Products Ltd.

Letters to the editor should be addressed to: the Editor, *Airfix Magazine*, Bar Hill, Cambridge, CB3 8EL. If a reply is wanted, a stamped addressed envelope (or international Reply Coupon) should be enclosed. All photographs submitted for consideration should be clearly labelled with the sender's name and address on the back of each.

Opinions expressed by correspondents on this page are their own and do not necessarily reflect the views of the Editor or Airfix Products Ltd.

magazine, as it is an unusual modelling topic. I feel Mr Wise should be complimented on this article, but would like to point out that armoured trains were not invented in 1882.

The principle goes back much further than this, and indeed the idea is credited to one William Bridge-Adams, who in 1859 published an article concerning coastal rail defence. Within this article Bridge-Adams suggested the mounting of guns on railway trucks, that would be protected by armour.

The first implementation of this idea was during the American Civil War of 1861-1865, when a few armoured trucks were used, the armour being improvised from old rails or heavy timber.

The first true armoured train was constructed by the French during the Franco-Prussian War of 1870-1871, the engine and wagons being fitted out with armour plating in the workshops of the 'Orleans' company under the supervision of Monsieur Dupuy de Lorme, engineering-chief for naval construction. This train consisted of one armoured locomotive and four armoured trucks (the armour being two inches thick). There is however, no record of the armaments carried. This train was used on four separate occasions, during the siege of Paris.

N. V. Morgan, London.

Clubs and events

THREE DAYS of excitement and fun are promised by the South London Warlords, who will be holding 'Salute '77' in the Winter Gardens, Margate, next April 15 to 17. Catering for all wargamers and military modellers, the event will include wargame competitions, demonstrations and inter-club matches as well as model painting competitions, trade stands and a bring-



and-buy stall. Make a date now, or write, enclosing an SAE, for further details to Will Power, c/o Valentine Guest House, 51-53 Godwin Road, Cliftonville, Kent.

A NEW modelling society has been formed in Wrexham, Clwyd. Called the Wrexham & District Scale Model Society, it is holding meetings twice a month on the second and last Monday of each month at 7.30 pm at the Rhosddu Community Centre, Prices Lane, Wrexham. All are welcome.

THE NORTH London Military Modelling Soc-

iety are holding their annual competition on Saturday, November 27, at the Green Lanes Methodist Youth Centre (near Manor House Tube station). There will be no fewer than 14 modelling competitions, full details of which are available from the address below, and the judging will be done by Roy Dilley, Bryan Fosten, Phil Stearns and Bob Marion. Trade stands and other attractions make this an event to visit if you possibly can. For further information write, enclosing an SAE, to Mr A. S. Proctor, 10 Newlands Place, Barnet, Herts.

THE HANWELL & District Model Society are holding their 1976 exhibition at the Hanwell Community Centre, Cuckoo Hill/Westcott Crescent, Hanwell, London W7, on Saturday October 16 from 2 to 8 pm and Sunday October 17 from 10 am to 7 pm. The club's emphasis is on model ships of all types, but the aim of the exhibition is to promote all forms of modelling, and anyone is welcome to attend. Details of the modelling classes can be obtained from the Honorary Secretary, Mr R. P. Seabury, 6 Mimosa Road, Hayes, Middx.

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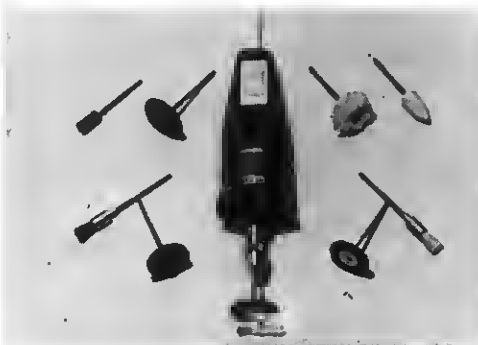
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